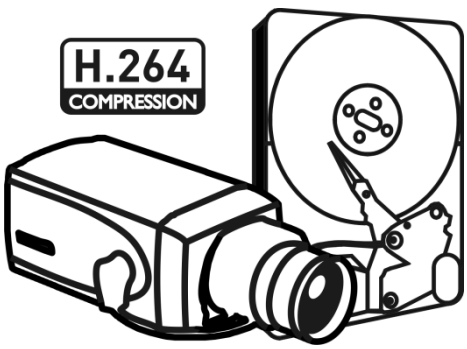
Premium Entry Level Real-Time DVR

User's Manual

- Triple Streaming / Digital Zoom
- Advanced User Authority Level
- Max 128ch CMS Client S/W
- POS (Text Insert Function)



Preface

We welcome you as a new user of the world's best digital video recorder (DVR) and leading Digital Video Surveillance System. For best use of this product, read this manual carefully and keep this manual close to your hand.

Copyright/Authentication/Trademark/Limited Warranty

Copyright

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Authentication

CE, FCC, KCC

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Limited Warranty

- The manufacturer, importer and agent shall not be responsible for accidental damage (including injury) and other damage caused by inappropriate use or operation of this product.
- The information in this manual is prepared based on the current specifications of this product. The manufacturer would add new functions and continue to upgrade the product with new technology. All specifications can be subject to change without prior notice.

Cautions

We strongly recommend that users read all safety cautions carefully before operating the product and safe operation.

Following signals contain critical safety information, they must be fully complied with. The cautions are categorized into Danger, Warning, Caution and Important.

Danger	Risk of death or serious injury. This is the highest priority danger warning.
Warning	Risk of serious or less degree of injury. May also cause damage to the product or to property.
Caution	Risk of minor injury or damage.
Important	Requirements or limitations regarding operation. Users are recommended to read the relevant details carefully so as to operate the product properly and without harm.

The above cautions indicate damage level which could occurred due to inappropriate system use

Danger	Risk of death or serious injury. This is the highest priority danger warning.

- RISK OF EXPLOSION IF BATTERY IS REPLACED BY INCORRECT TYPE. DISPOSE OF USED BATTERY ACCORDING TO THE INSTRCTIONS.
- THIS EQUIPMENT IS INDOOR USE AND ALL THE COMMUNICATION WIRINGS ARE LIMITED TO INSIDE OF THE BUILDING.
- Please connect the power cord only to the type of AC outlet indicated in the manual or product specification. If connected to other types of power outlet, fire and electric shock may result.
- Do not expose the product to moisture and dampness. Doing so may result in fire and electric shock.
- Do not place heavy objects on top of the power cord. Damage to the power cord may result in fire and electric shock.
- Do not place containers with liquid or small metal objects on top of the product. Liquid or small metal objects getting into the unit may lead to fire and electric shock.
- Do not score, bend, twist, pull or heat the power cord. Damage to the power cord may lead to fire and electric shock.
- Do not remove the top casing of the product. Doing so may result in electric shock. If internal examination and maintenance are deemed necessary, contact the authorized system vendors or installers.
- Do not modify the product in any way. Doing so may lead to fire and electric shock.
- In case of lightning, immediately turn off the power switch and remove the power cord from the power outlet. Failure to do so may result in fire and electric shock.
- Please use only the power cord supplied with the product. Use of other power cords may result in fire and electric shock.
- In case of smoke, smell or noise, immediately turn off the power switch and remove the power cord from the power outlet. Continued operation of the product may result in fire and electric shock. Request a maintenance service from the authorized system vendors or installers.
- If the product is dropped or damaged, turn off the power switch and remove the power cord from the power outlet. Continued operation of the product may result in fire and electric shock. Users should request a maintenance service from the authorized system vendors or installers.
- Do not touch the product with wet hands. Doing so may result in electric shock.

Warning	Risk of serious or lesser degree of injury. May also cause damage to the product or to property.

- Do not leave the power cord or other cables in passageways. Passers-by may trip and fall.
- Avoid contact with water or beverages. Contact with water or beverages may result in damage that cannot be repaired.
- In case of lightning, immediately turn off the power switch and remove the power cord from the power outlet. The product may otherwise be damaged.
- Excessive current from the product and the camera may result in an electric shock. Connect the power cord to an external device only when the products themselves are disconnected from their power supply.

Caution	Risk of minor injury or damage.

- If a foreign substance is stuck to the product, remove it using a soft cloth or tissue. Do not use chemical agents (thinner, solvent, etc.) to remove the substance.
- Do not operate or store the product in the following places.
  - An area that is either too cold or too hot
  - An area of high humidity, or in front of an air-conditioner, or in places subject to sudden temperature changes
  - An area where there is excessive dust
  - Areas where heat from the product cannot be emitted through both of the product's side ventilation openings
- Do not place credit cards/telephone cards/bank account books/tickets and other objects with magnetic properties near the product.
- Static electricity may cause damage to the internal parts of the product. Please remove static electricity from your body before touching the rear panel and internal electronic parts of the product.
- If this product is damaged beyond repair or reaches its maximum service life, dispose of it in compliance with local laws and regulations regarding the disposal of lead and plastic waste.

Important	Requirements or limitations regarding operation. Users are recommended to read the relevant details carefully so as to operate the product properly and without harm.

- The product may not work properly if the power source is unstable or and if electric shock occurs. Make sure the correct rated power is available.
- The product is designed to be proof against electric power failures; however, damage may occur as a result of power failure. Current data may be damaged or data might not be recorded. Make sure to use an Uninterruptible Power Supply (UPS).
- Since the product is designed to record video data on the hard disk, an error in the hard disk or other miscellaneous errors might prevent the product from recording properly. Periodic maintenance is required for proper operation of the product.
- The product is designed for users to configure their own interface. However a user configuration error could lead to operation malfunction. This product should be set up by certified installers only.
- Since the product is connected - and tightly coupled - to exterior accessories (camera, sensor, LAN, Hard Disk, etc.), there is a risk of malfunction from external causes. Ensure periodic maintenance by the certified installers.
- Use the rack mounting handle provided with the product for installation.
- In this product, 1 Kbyte equals 1,024 bytes, 1 Mbyte equals 1,048,576 bytes and 1 Gbyte equals 1,073,700,000 bytes.

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Chapter 1. Introduction

1. The System

This product is targeted at expanding DVR market. As the market is expanding from Professional to Consumer and into wider sectors, both price and feature oriented products are highly demanded in these days across different market sectors. This product is designed to fulfill these various aspects of different market sectors. Highly affordable, reliable and usable DVR series to fulfill basic needs of DVR with the most satisfactions.

2. General Features

- Standard H.264 video compression
- Provide Ultimate reliability with embedded linux System
- Dedicated Database structure for more stability.
- Support Full HD(1920x1080), HD(1280x720) resolution.
- CMS(Central Monitoring System) support
- Easy Setup same like DVR GUI in CMS.
- Web Monitoring, Searching and Setup
- Own Media Player for Backup Playback
- Dual USB Ports for Mouse operation, Multi USB Hub and Backup
- Up to two SATA HDDs available and limitless Capacity
- Two- Way Audio
- DVRs can be operated with Keyboard Controller
- Text-In & Relay Output Support
- Real Time Recording and Multi Ch. Playback
- Dual streaming with different resolutions in recording and remote transmission
- Digital Zoom Feature

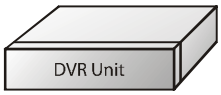
3. Specification

Model		FD02
Video	In	2 BNC (No Loop-out)
	Out	1 HDMI, 1 VGA , 2 CVBS (Spot)
Audio	In	2 RCA (Line Input)
	Out	1 HDMI, 1 RCA (Line Output), 2 RCA (Spot)
Device	Sensor Input	3 TTL (2+Emergency)
	Alarm output	2 TTL
	I/O Interface	RS232, RS485, USB x 2(Front)
Display	Speed	Realtime
	Resolution	1920 x 1080, 1280 x 1024, 1280 x 720, 1024 x 768
	Split mode	1, 4 (2:Live + 2:Playback), PIP, Digital Zoom
Recording	Compression	Hardware H.264 codec
	Speed/ Resolution	60fps@Full HD(1080p) 60fps@HD(720p)
	Picture Quality	Very High, High, Standard, Low
	Mode	Time-lapse, Event, Time & Event, Emergency (Panic)
Playback	Display	1, 4 (2:Live + 2:playback), Digital Zoom
	Search Mode	Calendar Search, Event Search, Text-In Search, Go to Time
	Playback Mode	Multi Channel Normal & Reverse Play, RW & FF (x2, x4, x8, x16, x32), Frame to Frame, Pause
Network	Interface	Ethernet (10/100/1000 Base)
	Protocol	TCP/IP, HTTP, DHCP, ADSL(PPPoE)
	Application	Live, Playback, Setup, Notification (Callback, E-Mail)
	Web browser	Internet Explorer 7 or higher
Storage		2 x SATA HDD or SSD
Backup		External HDD(USB), External USB memory.
Control		Front Panel Button, USB Mouse, IR Remote Controller, Joystick Controller
OSD		Graphic User Interface (Multilingual)
Approval		FCC, CE, KCC
ROHS		RoHS Compliance
Power consumption		DC12V, 5A (60W)
Operating Temp.		5°C ~ 40°C / 41°F~104°F
Operating homidu		0%~80% / non-condensing
Dimension		340(W)x67(H)x267(D)mm / 13.39(W)x2.64(H)x10.43(D)inch
Weight		2Kg / 4.4lbs (without HDD)

Chapter 2. System Installation

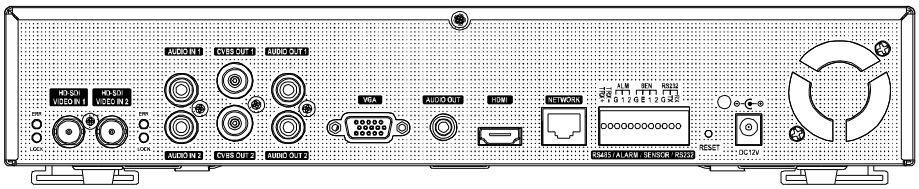
1. Package Contents

The following components are included in product box:

DVR Unit	
DC Adaptor	
Power Cord	
Remote Controller	
Quick Guide	
CD (User's Manual & Network S/W)	

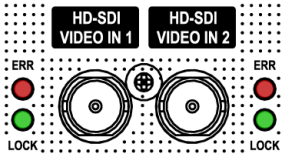
2. Connecting Devices

Following picture shows the rear panel of DVR:



• **Front USB** : Two USB ports are available in front to connect external devices like HDD, Flash memory for Backup, System upgrade or USB mouse.

Video Input



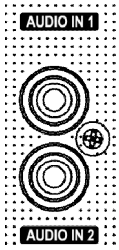
Connect **HD-SDI CCTV** camera with using '**HD-SDI video in 1,2'** BNC video connectors. Use regular cable to minimize video noise.

• **LOCK (Green LED)** : Turned on when SDI Camera and DVR connected normally.

• **ON ERR (Red LED)** : Turned on when error detected in SDI Camera data receiving

* Live image would be ok even error detected on receiving data.

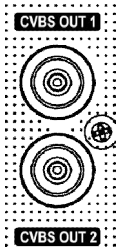
Audio Input



The DVR can record audio up to 2 sources. Connect the audio sources to the Audio-In RCA connectors. All channels need external pre-amplifiers.

*Check your local law(regulation) before audio installation because whether it is illegal use or not.

SPOT output(CVBS out)

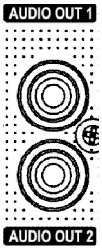


This DVR provides 2 spot outputs with video and sound input.

• **Composite output:** This output provides 720x480 resolution and user can define output type and screen ratio. For more details, see ***Chapter 3-2. DVR Configuration***.

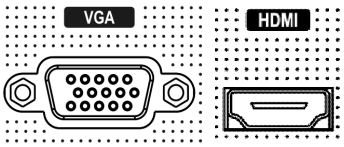
• **Audio output:** Make sound outputs on each audio input. Delay setup is available to compensate time difference when playback. For more details, see ***Chapter 3-2. DVR Configuration***

Audio output



Audio output uses line output level. Connect speaker with built in power amplifier or power amplifier passed one.

HDMI, VGA Output

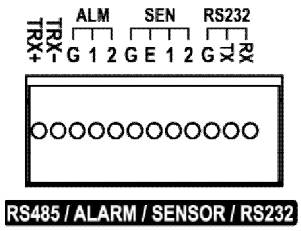


Connect HDMI monitor or VGA monitor. This DVR provides same image output on HDMI and VGA monitor. Available output resolutions are 1920 x 1080, 1280 x 1024, 1280 x 720, 1024 x 768. Factory default is 1280 x 720. To change output, see following 3 steps.

1. Press and hold 'Zoom' button for 3seconds on remote controller or system front. This changes resolutions as following order 1920 x 1080, 1280 x 1024, 1280 x 720, 1024 x 768.
2. Select display resolution on quick setup menu.
3. or Select display resolution on setup menu

HDMI port provides 32 kHz sampling frequency audio output.

RS485/Alarm/Sensor



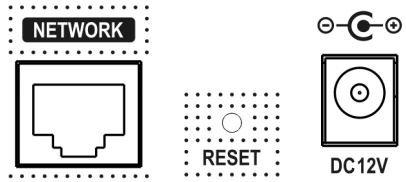
This RS485 connector can be used to control PTZ cameras. The DVR can also be controlled by keyboard controller.

2 alarm output ports are available in using external alarms such as sirens or lights. Alarm output connector is TTL output signals.

2 sensor input and 1 emergency sensor input ports are available in using external devices. You can use sensors to inform event on DVR. The emergency sensor is designed for Emergency recording only. This follows Emergency recording configuration once it is triggered.

RS-232C connector is provided to connect an ATM/ POS machine with Text-In feature.
To make connection on terminal block, press and hold the button and insert the wire in the hole below button

Etc



- **Network**: Connect a LAN cable on RJ-45 port on DVR for remote monitoring via network, playback and setup. See ***Chapter 3-2. DVR Configuration*** about network configuration
- **Reset**: : this will return all DVR settings to original factory default. To do reset, turn DVR off first and turn it on again and press and hold reset button until system initialized. (use paper clip or similar to press) .
- **Power connection:** Connect enclosed adapter on it. (DC12V, 3.33A) . (free voltage from 100V to 240V, 50/60Hz)

※ Adapter input range is: AC 100V ~240V, 50/60Hz

3. Cautions

- Avoid installing the product where there are direct rays or it is hot by locating near from heat generator. (May cause fire)
- Do not put vase, flowerpot, cup, cosmetics, drug, and anything the contain water on product. (May cause fire or electric shock, and it may injure people by falling)
- Do not insert or drop any metal object (coin, hair pin) or flammable object (match, paper) into air hole. (May cause fire or electric shock)
- Do not put any heavy object on it. (May injure people by being fell or destroyed.)
- Put power plug surely not to be moved. (If not, this may cause fire.)
- Unplug power plug and antenna when there are thunders and lightening. (May cause fire.)
- For cleaning the product, wipe surface with dry towel. Using chemical agent or cleaner may change the color and unpeel paint.
- Do not put several plugs at same time. (May cause electric shock.) If there is smoke or strange smell, stop operation. In this case, turn the power off and unplug it, and then contact our service center. (If you keep using it, this may cause fire or electric shock.)
- Do not unplug by pulling cord. (If cord is damaged, it may cause fire or electric shock.)
- Do not plug or unplug with wet hands. (May cause electric shock.)
- Keep the power cord untwisted. (May cause fire or electric shock.)
- Use proper adapter. (Using too much electric power may cause fire or electric shock.)
- Do not install it at where exposed to rain and wind and water drop. (May cause fire, electric shock and transformation.)
- Keep away from fire. (May cause fire.)
- Do not disassemble or remodel on your own. (May cause malfunction or electric shock.)
- Do not put next to flammable materials like flammable spray. (May cause fire.)
- Do not install it at a place with too much dirt. (May cause fire.)
- Do not install it on unstable places like shaking table and inclined place or shaking place. (May injure users by falling down or being upside down.)
- Do not put an heavy object on power cord or avoid it from being pressed by the device. (May cause fire or electric shock.)
- In case of using extension cord, do not use several devices at same time. (May cause fire with abnormal heating of extension.)
- When there are dirt on power plug pin or power outlet, clean it nicely. (May cause fire.)
- Do not damage on power cord or plug, and bend or twist or pull too much, and put it between other objects or heat. If power outlet insertion part is not tight, do not use it. (May cause fire or electric shock.)
- Do not drop or give a shock to the product. (May injure people or cause malfunction.)
- Do not touch power adaptor or signal controller. (May cause electric shock.)
- Do not put any object too close to block cooling fan. (May cause fire.)
- In case of exchanging batteries with improper type, there might be danger of explosion.
- For used batteries, throw away separately from other garbage.
- When you take out batteries, avoid children from eating them by mistake. Keep them away from children. (If a child ate them, contact a doctor right away.)

Chapter 3. Using DVR

1. Basic Operation

1-1. Front Panel & IR Remote Controller

This DVR should be installed correctly before using. Button's position and shape may varied by DVR model. Commonly used main buttons positioned in front panel.

Control	Description
USB Port	Two USB ports are located on front panel.
Camera Buttons (1~0)	Press 'camera' button and 'Enter' button make displays selected camera to display full screen. Buttons are used to enter passwords.
MENU / EXIT Button	Enters the Setup Menu. User will need to enter the authorized password to assess Setup. In Playback mode, MENU button displays the Playback Menu.
DISPLAY Button	Changes the screen display mode in the current screen or playback screen.
SEQUENCE Button	Display live channels sequentially.
Up, Down, Left, Right Arrow, ENTER Buttons	Change settings for the product in MENU mode or used in PTZ control mode. (pan, tilt)
BACKUP Button	Backup recorded data to an external storage device.
PLAYBACK Button	Switch to playback mode from live mode.
❚❚ PAUSE Button	Pause playback image on playback mode. - Display menu to save PTZ preset on PTZ mode.
▶ PLAY Button	Play video forward. Press button repeatedly to increase play speed up to max 32 times (1, 2, 4, 8, 16, 32 times) faster. Use this button to move right when setting the menu. - Focus on far distance in PTZ mode.
◀ R.PLAY Button	Plays the video backward. Press the button again to increase playback speed up to max 32 times (1, 2, 4, 8, 16, 32 times) faster. Use this button to move right when set the menu. - Zoom out on PTZ mode.
❚▶ STEP FORWARD Button	Move forward frame by frame on paused status. Use this button to move up when set menu. - Focus on near distance in PTZ mode.
◀❚ STEP BACKWARD Button	Move backward frame by frame on pause status. Use this button to move down when setting the menu. - Zoom In in PTZ mode.
⏏ EJECT Button	It will open or close the backup drive such as CD-RW or DVD - Display menu to load PTZ presets in PTZ mode.
PTZ Button	Changes to PTZ control mode from live mode.

ZOOM Button	Zoom current camera image on screen.
PIP Button	Change to PIP screen mode from live screen.
FREEZE Button	Freeze current screen.
AUDIO Button	Select channel for live & playback audio output.
OSD Button	Turn on/off OSD display.
LOG Button	Check system log information.
ID Button	Select DVR system ID. (Remote controller only)
E.REC Button	Press E.REC button to apply Emergency Recording Mode for whole channels. It displays "!" on the screen. To stop E.REC mode, press button again.
Status LED	Power, HDD, Network, Alarm

1-2. Turning on the System

Connect power and turn the power on DVR. It takes about 10~30 seconds in initializing system. Once system is initialized, it displays live screen and start to record video automatically.

Note: To turn off the system, select SHUTDOWN in main menu (MENU > SHUTDOWN) and unplug power cord when shutdown message appears.

Note: HDD should be formatted when it is installed first time.
"MENU > RECORD > Storage > HDD format"

1-3. Menu Bar

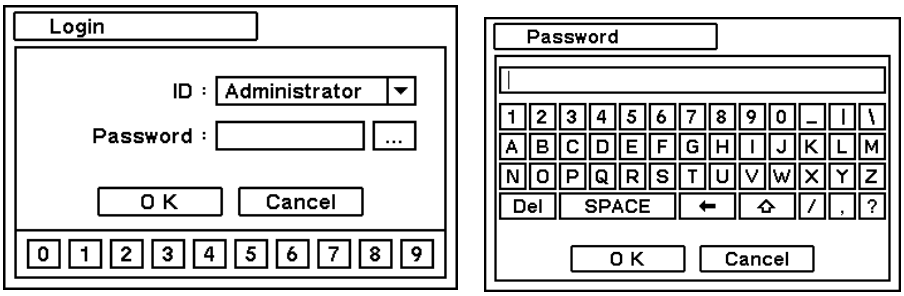
Menu bar will appear bottom of screen as follows.

MENU	Press Menu to open main menu list.
69GB/69GB	Show used space as % of HDD being used.
	Turned on when the HDD is set as overwritten.
	Sequence display mode.
	Turned on when the system is connected to network.
	Turned on when Alarm is on active.
	E.REC (Emergency Recording) Mode.
2009-04-03 07:31:32 PM	Display date & time.
	IR Remote Controller

1-4. Display Icons

	No Recording
	Recording (Red)
	E.REC (Emergency Recording)
	Event Recording (Red)
	Pre Event Recording (Blue)
	Motion Detection
	Sensor Detection
	Text In
	PTZ Camera
	Instant Backup
	Clip Maker (Blue)
	Backup (Red)
	Video Loss

1-5. User or Admin Login


Login
ID : Administrator
Password :
...
O K
Cancel
0 1 2 3 4 5 6 7 8 9
Password
1 2 3 4 5 6 7 8 9 0 _ | \
A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
Del SPACE / , ?
O K
Cancel

Press MENU to enter main menu. Login screen appears to enter ID and Password. Up to 8 numbers are required on password with combination of numbers from 0 to 9. Click numeric buttons on the bottom to enter password. Click "…" button to pop up virtual keyboard when using front buttons or remote controller to enter password.
The factory default password is 'none', press OK to log in system for the first time log in. Password can be set in password setup option (MENU > SYSTEM > User). System will be automatically log out if it is not in-use for a while. This "Auto Logout Time" can be set in password set up option (MENU > SYSTEM > User).

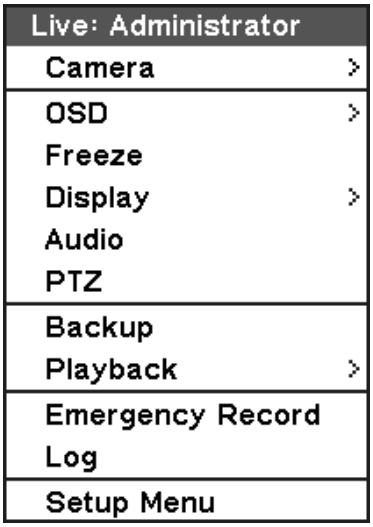
1-6. The Main Menu

The Main Menu of DVR consists of SYSTEM, DEVICE, DISPLAY, RECORD, NETWORK and EVENT. And each menu consists of various sub menus that allow detail set up of the system. Use Mouse, Remote Controller or Front Buttons to access each menu.

Note: Please make sure system log out when setup or operation is completed to prevent any unauthorized changes of system setup or operations.

MAIN MENU	SYSTEM	Information
		Date & Time
		User
		Quick Setup
		System Log
	DEVICE	Camera
		Audio
		Alarm
		Keyboard
		RS232 & RS485
	DISPLAY	Display
		Composite
	RECORD	Storage
		Record
		Utilities
	NETWORK	Address
		DDNS
		Notification
		Transmission
	EVENT	Sensor
		Motion
		Video Loss
		Text-In
		System
	LOGOUT	
	SHUTDOWN	

1-7. Contextual Menu



Additional Contextual Menu screen appears by pressing right button on the Mouse.

Camera : Select camera no.
OSD: select OSD display option
Freeze : Pause current image display
Display: Display option
Audio : Select Audio output
PTZ : Select PTZ options
Backup : Select backup options
Playback : Playback recorded data
E. Record : Start Emergency Recording
Log : Select System/Event log
Setup Menu: Enter Main setup menu

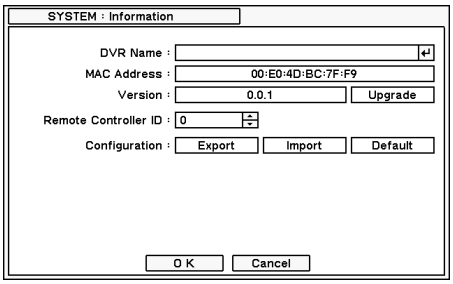
For more detail information on see 2. DVR Configuration.

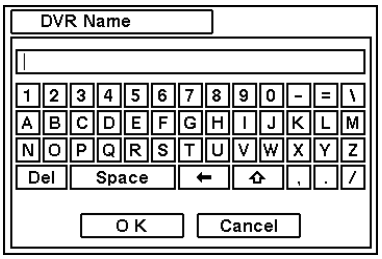
2. DVR Configuration

2-1. SYSTEM

In SYSTEM menu, System configuration options for general Information, Date &Time, User, Quick Setup and System Log can be selected.

2-1-1. MENU > SYSTEM > Information





In Information screen, DVR Name, MAC Address, Version, Upgrade, Mac Address, Remote Controller ID and Configuration options can be selected. Select and press DVR Name or ↵ to change DVR name. Use virtual keyboard to enter DVR name.

To upgrade system, place upgrade file on USB Flash Memory and put it on DVR. Once device is recognized, press upgrade button to execute system upgrade.
Upgrade will take approximately 5 minutes. DVR will reboot automatically when the upgrade is completed.

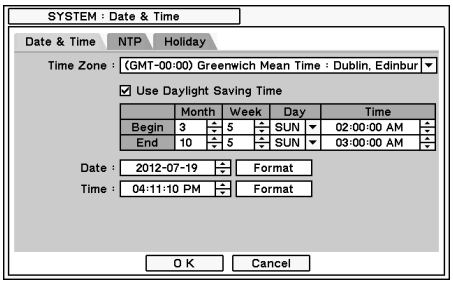
Note: DO NOT remove USB Flash Memory or turn off the system during the upgrade. Removing USB Flash Memory or Turning off the system during the upgrade may cause system malfunctioning.

Remote Control ID
Enter Remote Control ID to control multiple DVRs individually. If Remote Control ID remains as 0, no need to select Remote ID when using remote controller. It will work as general ID for any remote controls and a remote control will communicate with any DVRs with ID 0.

Configuration
System settings can be saved and loaded using Configuration option
Export: Save settings to USB Flash Memory
Import: Load saved settings from USB Flash Memory
Default: Load factory default settings

Note: Configuration Import does not affect or change system and network settings.
Net Network settings changed when select Default option.

2-1-2. MENU > SYSTEM > Date & Time

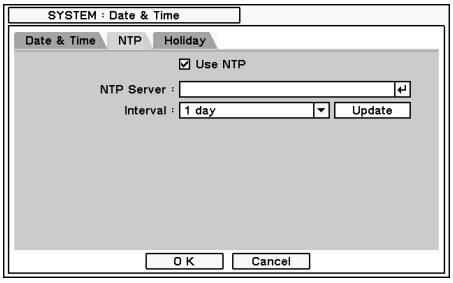


In the Date & Time, Time Zone, Date, Time, NTP Server, Holiday options can be selected.

Highlight and press Time Zone ▼ to select right Time Zone.

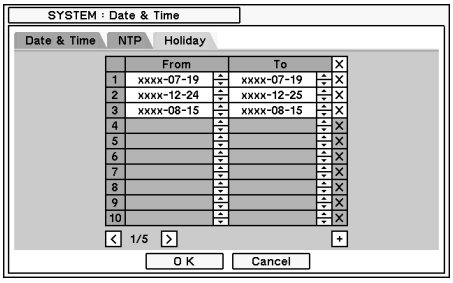
Select 'Use Daylight Saving Time' if it is applicable. Enter start and end date/time for local 'Daylight Saving Time'.

Press ÷ button to set up Date and Time. Press Format button to select a date & time display format.



Select 'Use NTP' to enter Time Servers to be synchronized with DVR. Highlight and press ↵ to enter Time Server using the virtual keyboard. Press 'Update' to synchronize the DVR time with the registered time server.

Note: NTP is not essential for DVR operation. Any type of Standard Time Server can be used (e.g. time.windows.com). Time Synch might not be completed due to heavy traffic or delays from the Time Synch server.

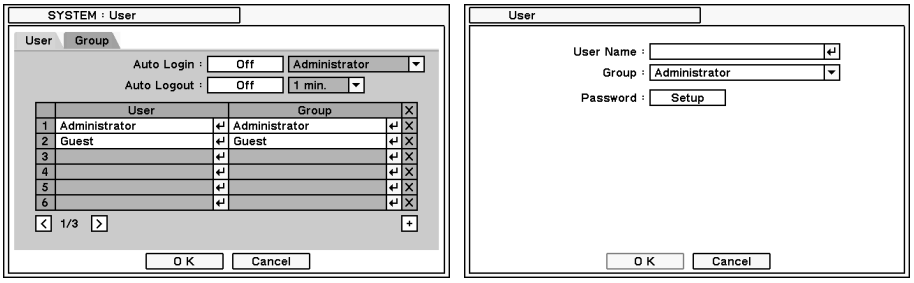


Press Holiday to set specific date as Holiday setup. Set specific date by pressing + button. Change and delete dates using ÷ and X buttons.

Note: Holiday may not same date every year. User have to update every year.

2-1-3. MENU > SYSTEM > USER

User can define new user and permissions on this page



Add new user with press [+] button. To delete, use [X] button.

Auto Login: It allows user to log in right after system boots up automatically. As a system allows auto log in without the authentication process please make sure DVR has a limited access by non authorized personnel

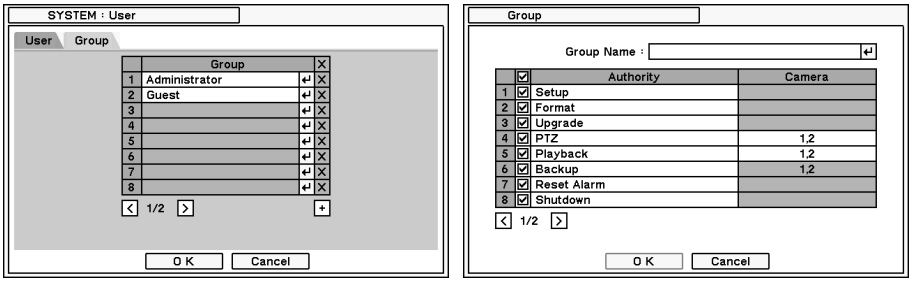
Auto Logout: Set On or Off Auto Logout option.

User name : Enter user name

Group : Select a group which a new user will belong to

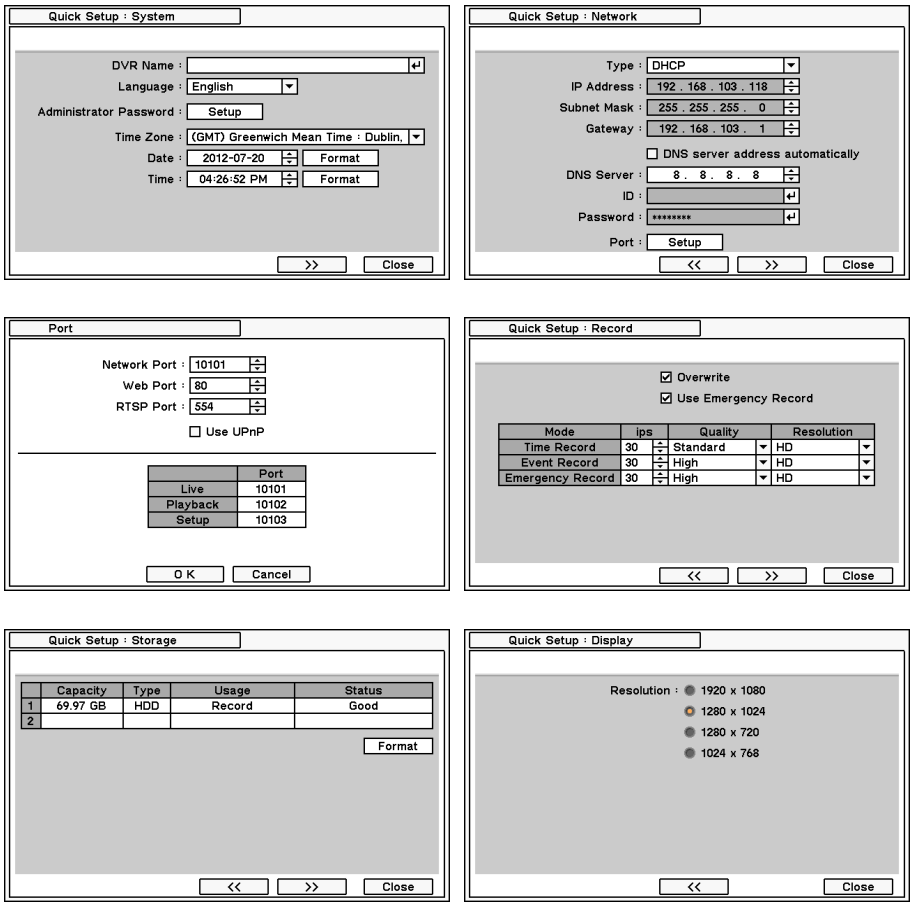
Password : set a new password or change a password.

Note: No password defined on initial starts.



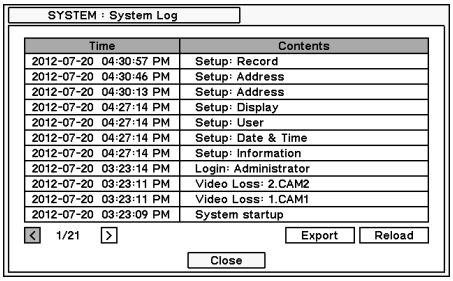
Register new group use [+] button and set permission of group to each user. To delete, press [X] button.

2-1-4. MENU > SYSTEM > QUICK SETUP



Quick Setup Menu allows easy and basic setup for main menu settings.

2-1-5. MENU > SYSTEM > SYSTEM LOG


SYSTEM : System Log
Time Contents
2012-07-20 04:30:57 PM Setup: Record
2012-07-20 04:30:46 PM Setup: Address
2012-07-20 04:30:13 PM Setup: Address
2012-07-20 04:27:14 PM Setup: Display
2012-07-20 04:27:14 PM Setup: User
2012-07-20 04:27:14 PM Setup: Date & Time
2012-07-20 04:27:14 PM Setup: Information
2012-07-20 03:23:14 PM Login: Administrator
2012-07-20 03:23:11 PM Video Loss: 2.CAM2
2012-07-20 03:23:11 PM Video Loss: 1.CAM1
2012-07-20 03:23:09 PM System startup
1/21
Export Reload
Close

In the System Log, full list of system logs can be searched.

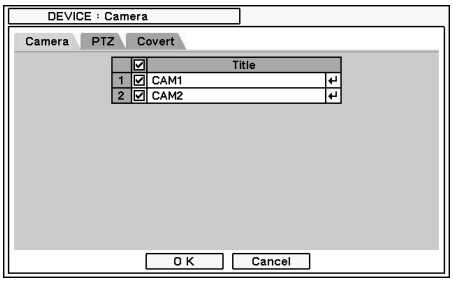
Press Reload button to refresh log list. USE < > button to search log list page by page.

Log list can be exported in text format.

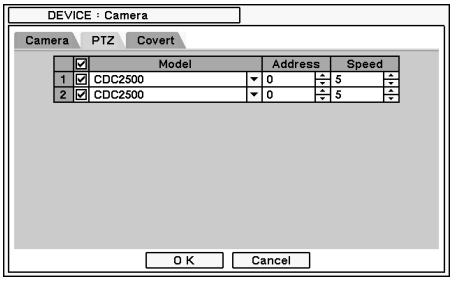
2-2. DEVICE

Under Device menu, Device configuration options for Camera, Audio, Alarm, Keyboard and RS232 & RS485 (POS/PTZ/Keyboard) can be selected.

2-2-1. MENU > DEVICE > Camera



Set Camera display option. Camera display (video loss display) can be disabled by unmarking the box next to it if there is no camera connected. Press ↵ to change title.



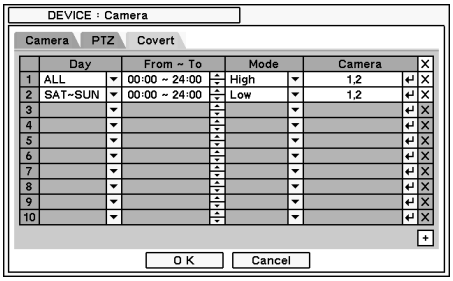
PTZ Control

Select channel connected with PTZ camera. Select PTZ from the contextual menu appears by pressing right mouse button.

Note: PTZ can only be controlled in single screen mode.

Use icons on screen to control PTZ. By using a mouse, click arrows to move around PTZ and click icons for each functions of PTZ camera.

	Zoom Out
	Zoom In
	Focus on near distance
	Focus on far distance
	Save Presets
	Load Presets



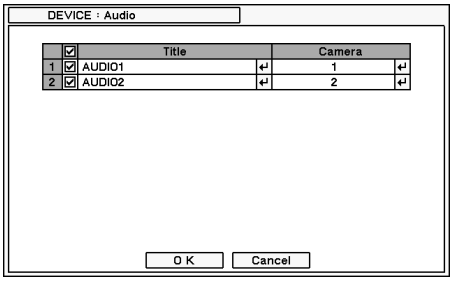
Covert Setting

Covert setting allows the privacy on monitoring. If Covert is set, live or playback image will not be displayed. Covert can be scheduled by day, time and mode by cameras.

Covert Low Mode: No display of video image on screen but OSD still remains on screen.
Covert High Mode: Neither of video image or OSD will be displayed on screen.

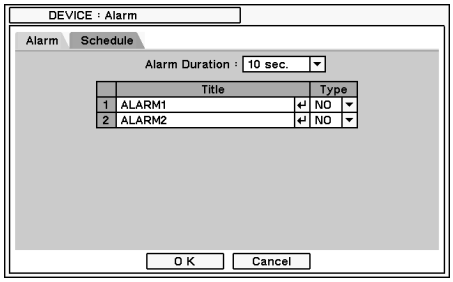
Note: Any Covert options will not affect recording data as it is applied on monitoring conditions.

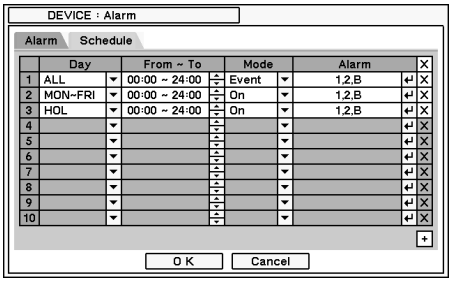
2-2-2. MENU > DEVICE > Audio



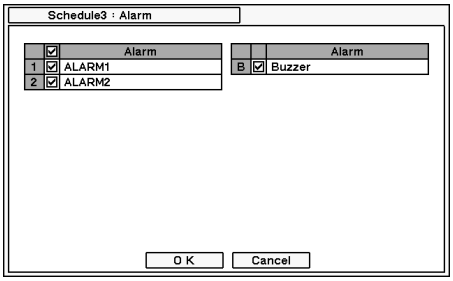
Select Audio for Audio recording. Each Camera and Audio can be linked regardless of its channel numbers.

2-2-3. MENU > DEVICE > Alarm



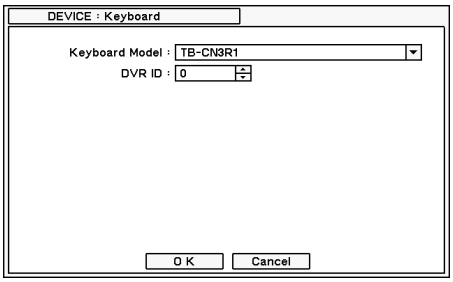


Alarm duration: Set Alarm activation time from 5 seconds to 10 minutes.
Select Schedule tap to schedule Alarm operation. Alarm can be set by day, time, mode and inputs (camera).



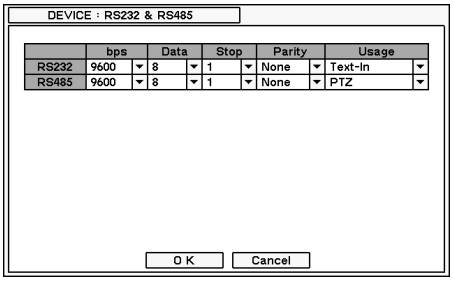
Press ↵ to choose Alarms and set Buzzer with Alarm activation.

2-2-4. MENU > DEVICE > Keyboard



Press ▼ to find and select keyboard from the list.

2-2-5. MENU > DEVICE > RS232 & RS485



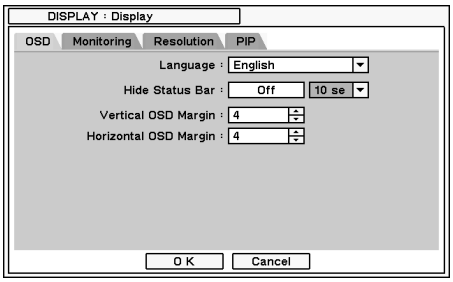
Press ▼ to select a device for each port.
RS232: Supports Text In (POS) device. PTZ and Keyboard
RS485: Supports Text In (POS) device ,PTZ and Keyboard.

Note: Text In devices (e.g. Cash Register) needs to use ASCII code for Text In info on DVR

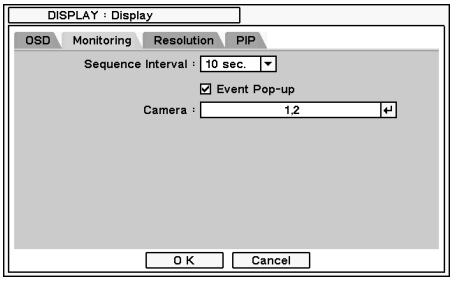
2-3. DISPLAY

Set display configuration and composite output on this menu.

2-3-1. MENU > DISPLAY > Display

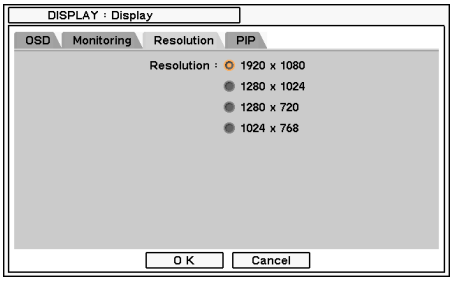


Language: Select system language. Press ▼ to find available language options.
Hide Status Bar: Select On/Off and time to hide Status Bar when system is not in use.
Vertical OSD Margin: Set vertical OSD margin on screen.
Horizontal OSD Margin: Set Horizontal OSD margin on screen.

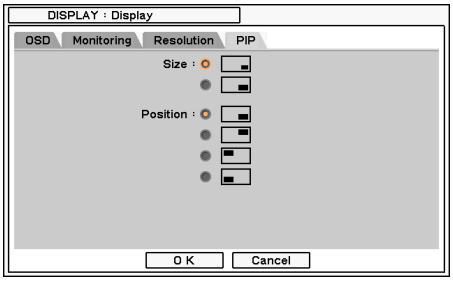


Sequence interval : Set switching time interval on each camera changes in sequence mode.

Event popup : Pops up the camera image in full screen when pre-set event occurs.

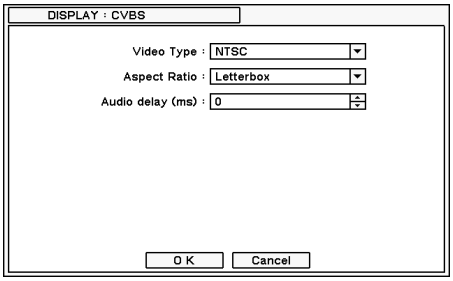


Resolution : Set resolution of HDMI and VGA output.



PIP: Stands for 'Picture In picture'. Select size and position of sub channel.

2-3-2. MENU > DISPLAY > CVBS



Video type : Select signal type (NTSC/PAL) for composite output.

Aspect Ratio: select ratio of composite output image according to following situation.

- Letterbox

In Letterbox, it shows 16:9 ratio screen displayed. This has black space top & bottom of image and proper in 4:3 TV monitor.

- Pan & Scan

Pan & Scan, outputs 4:3 ratio screen displayed. Both side margins will not be displayed due to screen size. Proper in 4:3 TV/Monitor.

- Widescreen

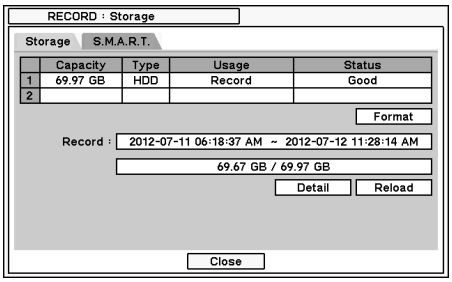
In Widescreen, it shows 16:9 screen ratio. Proper in using 16x9 TV monitor .

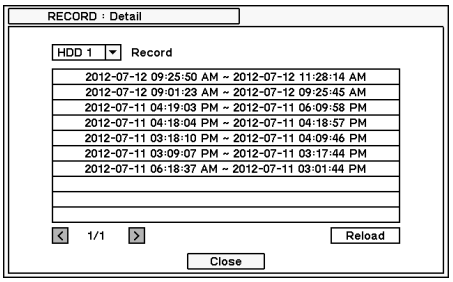
Audio delay : Set delay time for audio output. This synchronizes audio when image displays.

2-4. RECORD

Under Record menu, Record configuration options for Storage, Record and Record Tools can be selected.

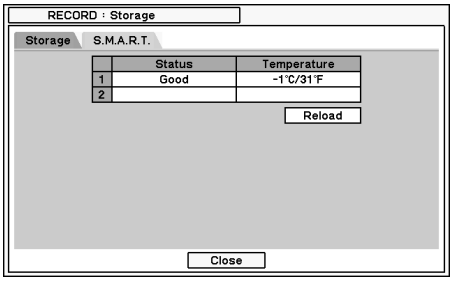
2-4-1. MENU > RECORD > Storage





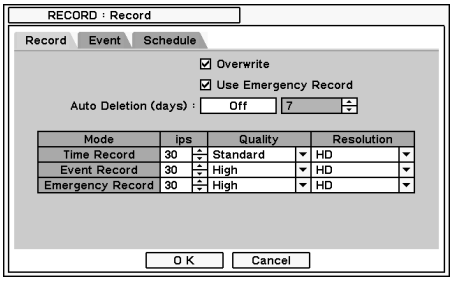
In Storage, it displays the installed/connected storage status such as Capacity, Type, Usage and Status.

Format: Press Format to format selected HDD.
Record: Displays the recording period and data stored on HDD.
Detail: Displays the detail information of data stored on HDD



In S.M.A.R.T, HDD status are being displayed including its temeprature. Click Update to get the latest status.

2-4-2. MENU > RECORD > Record

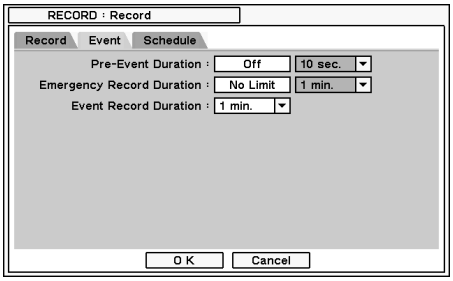


In Record, general recording options can be selected including overwrite, resolution, speed, recording quality and etc.

Overwrite: Select this option to overwrite recorded data when HDD is full.
Auto Deletion(days): system will delete data which is older than defined days automatically.
Resolution: Select recording resolution.

Time Record: Set ips/quality for continuous recording
Event Record: Set ips/quality for event recording
Emergency Record: Set ips/quality for emergency recording mode.

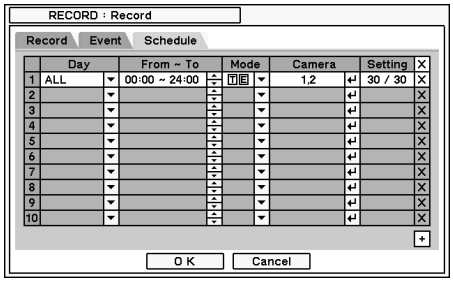
Note: The ips needs to be set higher than 1ips for Audio recording at D1 or Half D1, otherwise there would be time delay between recorded Audio and Video.

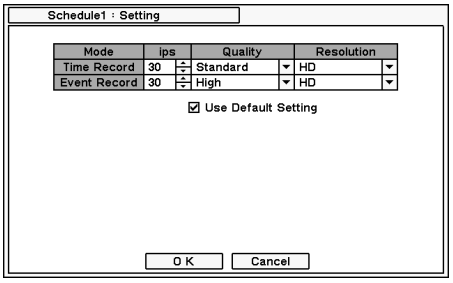


In Event, pre and post recording options for Event can be set.

Pre-Event Duration: Video Images occurred right before an Event can be recorded by setting Pre-Event under Event Mode. Duration Pre-Event recording can be set using Pre-Event(sec) up to 30 seconds.

Emergency Record Duration: Time duration can be set for Emergency recording from 5 seconds to 30 minute or continuously by selecting No Limit option.
Event Record Duration: Set recording duration for events up to 30 minutes.

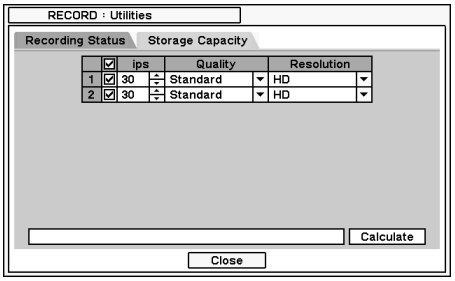




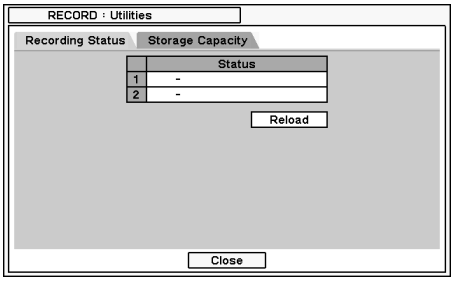
In Schedule, fully detailed and specified recording schedules can be set by day, time, modes, cameras and recording options.

Press [+] to add a new schedule. To remove an existing schedule, press [X] next to it. Press Setting to set recording options.
Use Default Setting: Check Use Default Setting to follow main recording setting under Record menu.

2-4-3. MENU > RECORD > Utilities



In Recording Status, it displays current recording options and status. The list will show Recording Frames, Video Quality, Resolution. Press Calculate once resolutions, ips, number of cameras and quality are set. The recording period is calculated based the size of HDD installed.



In Storage Capacity, estimated HDD usage and recording period can be calculated.
The GB size shows the HDD size requires for a day recording. Day and Hours shows the period can be recorded based on the installed HDD size.

Note: The calculation results show approximate data only. Same frame rate and video quality does not guarantee same storage size and recording duration. This is due to the variety of conditions on images such as more/less colors or more/less movements. This situational variance will affect the file sizes more at lower frame rate settings.

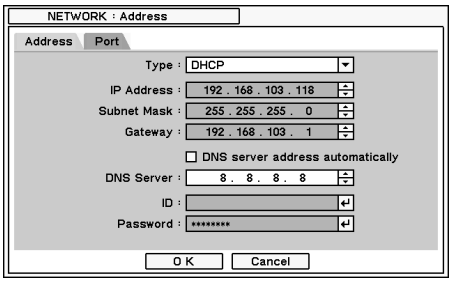
Note: Change ips manually. It does not change ips according to the change of resolution.

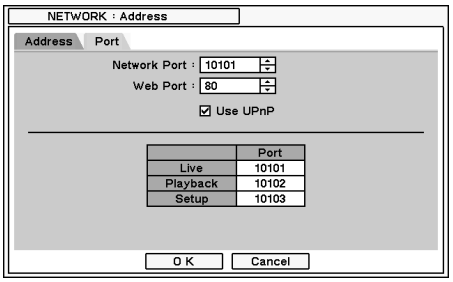
Note: approximate size for each resolution – CIF: 360X240, Half D1: 720x240, D1: 720x480

2-5. NETWORK

In Network menu, Network configuration options for network Address, DDNS, Remote Notification and Transmission can be set up.

2-5-1. MENU > NETWORK > Address


NETWORK : Address
Address
Port
Type : DHCP
IP Address : 192 . 168 . 103 . 118
Subnet Mask : 255 . 255 . 255 . 0
Gateway : 192 . 168 . 103 . 1
DNS server address automatically
DNS Server : 8 . 8 . 8 . 8
ID :
Password : ********
OK
Cancel



In Address, Information such as Type, IP address, Subnet Mask, Gateway Port and DNS can be set for network connections.

Type: Select type of network configuration from: Static IP, DHCP and ADSL(with PPPoE).

IP Address: Enter IP address with button.

Subnet Mask: Enter Subnet Mask withj button.

Gateway: Enter Gateway wigh button.

DNS: Set IP address of DNS server. If you set DNS Server, domain name of the DVRNS server instead of IP address can be used during the DVRNS Server setup.

DNS sever address automatically: Select this option to get DNS Server Address automatically when use DHCP or PPPoE option.

In Port, Select appropriate port number for external access to the system. The port list shows necessary ports to be opened for each operation.

Network Port: Set port for DVR Remote Client.

Web Port: Set port for Web Remote Client.

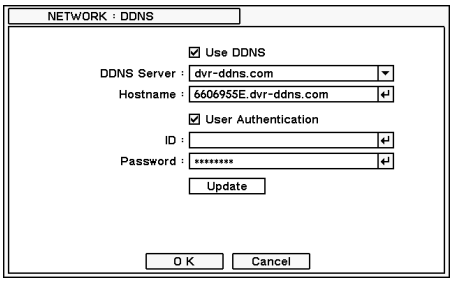
UPnP Option: By checking the UPnP option, it automatically sets port on a connected router.

Note: Router should support UPnP option and if same ports are already being used, DVR displays a message and needs to try other ranges.

Note: ID and Password are required in ADSL(with PPPoE) type.

Note: Default TCP port is 10101 but it can be set from 1500 to 32000 if it is necessary.

2-5-2. MENU > NETWORK > DDNS



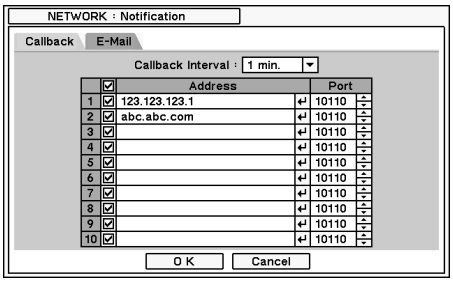
In the DDNS, network options for DDNS can be selected.
DDNS: Dynamic Domain Name Server allows dynamic network connections.

Note: "dvr-ddns.com" and "www.dyndns.org" offer free registrations for DDNS service. Please refer to the appendix for DDNS set up page.

Host Name: Name the DVR or site where it is located using the virtual keyboard by pressing ↵.
ID/Password: ID and Password are required for Authentication.

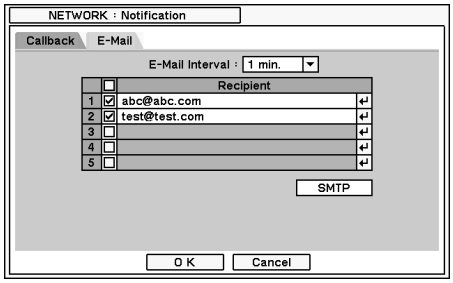
Note: Use registered ID/Password in DDNS.
Note: Host Name can also be registered automatically without registration from DDNS Server. Just enter Host Name (not duplicated name) and cancel to check Use ID. After clicking Update button, a message is shown to succeed its status or not.

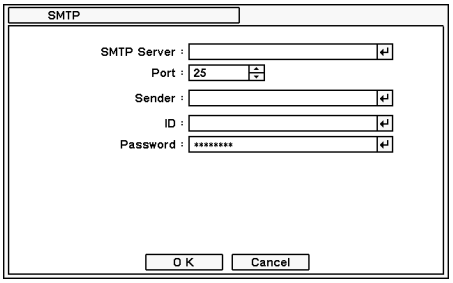
2-5-3. MENU > NETWORK > Notification



Callback notifies to multi remote client when DVR detects event in same time. Enter IP address of client sites to receive event notifications from remote sites. Press ↵ to pop up virtual keyboard.

Callback Interval: Select Callback Interval to set time interval between consequential events being sent to remote site.
Note: Any events occur between the pre-set interval time will not be sent to remote site. e.g. If the interval is set as 30 seconds, only the events occur every 30 seconds since the first event will be sent to remote site.





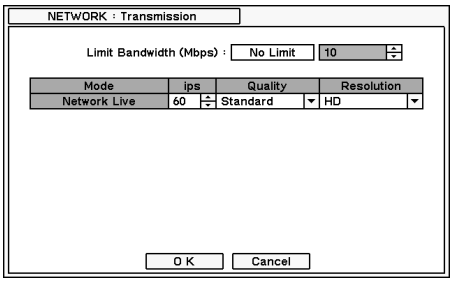
In Email, Events can be notified to personal email addresses by text message.
E-Mail Interval: Select E-Mail Interval to set time interval between consequential events being sent to remote site via email.
Recipient: Enter the email address of a recipient. Up to 5 recipients can be entered.

Note: Any events occur between the pre-set interval time will not be sent to remote site. e.g. If the interval is set as 30 seconds, only the events occur every 30 seconds since the first event will

be sent to remote site via email.

SMTP Server: Enter SMTP server with virtual keyboard. SMTP server information can be obtained from a system administrator.
Sender: Enter the address/name where the email is being sent from.

2-5-4. MENU > NETWORK > Transmission

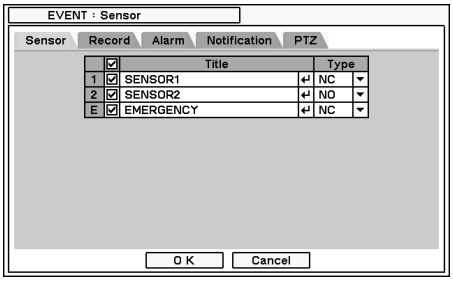


In Transmission, Network transmission can be controlled with ips and bandwidth.

2-6. EVENT

In Event menu, user can set event related actions. Events are about Sensor, Motion, Video Loss, Text-In, System.

2-6-1. MENU > EVENT > Sensor

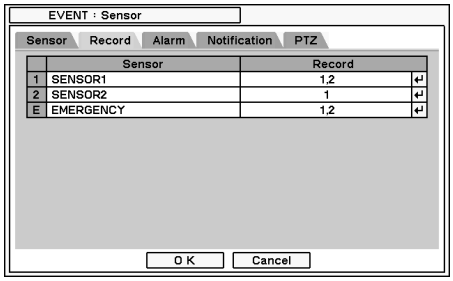


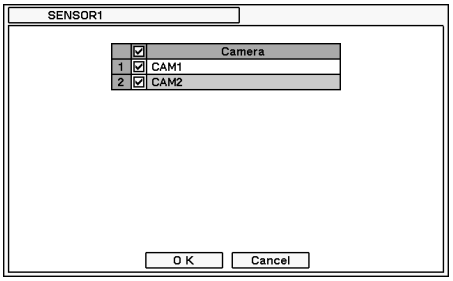
In Sensor, each sensor can be selected for activation and its type. Select Sensor Type using ▼ button.

NC: Normally Closed

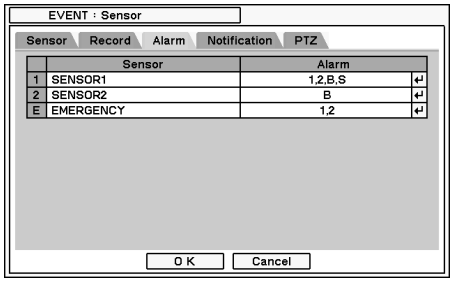
NO: Normally Opened

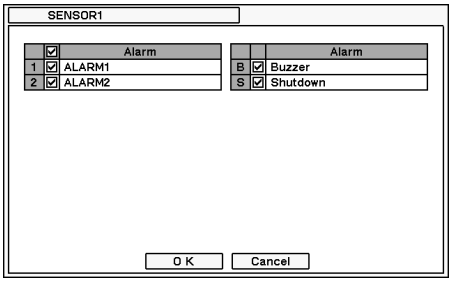
Last Sensor is designed for Emergency recording only. It will follow Emergency recording setting when it is triggered.



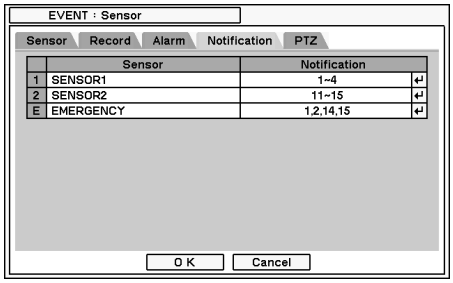


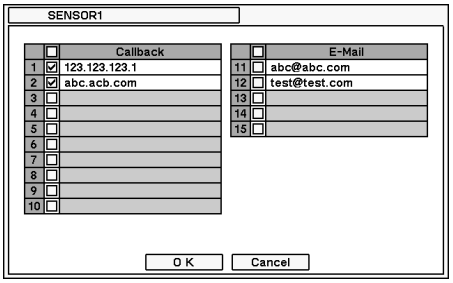
In Record, each sensor can trigger actions to single and multiple cameras. Press ↵ to select cameras to be activated.



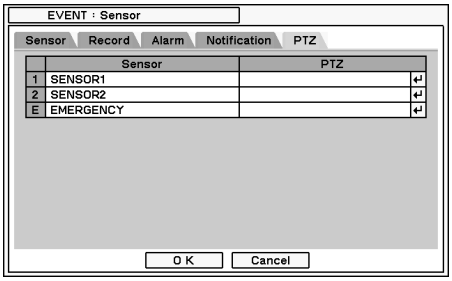


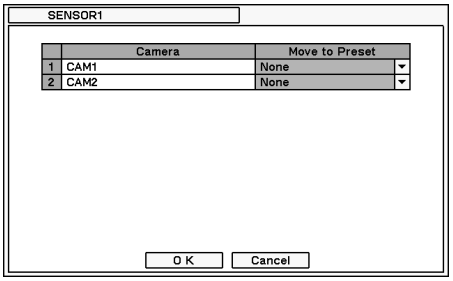
In Alarm, each sensor can trigger actions single and multiple alarms. Press ↵ to select alarms to be activated





In Notification, each sensor can trigger actions single and multiple callback or emailing to sites. Press ↵ to enter callback or email address to be activated with sensors.

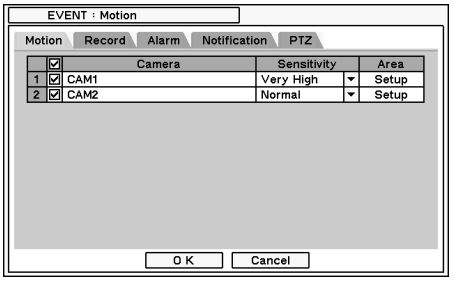


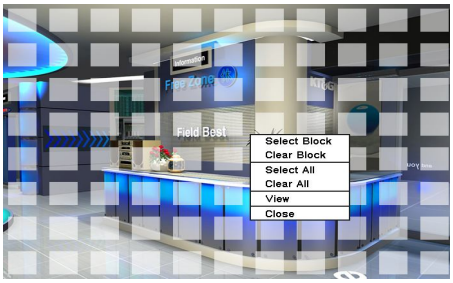


Preset feature on PTZ camera can be activated by the Event triggering. When Event occurs, PTZ moves to the preset position where event and positions are. The above menu shows that sensor 1 is set to activate cameras 1,2,3 and 4. If you click PTZ section, PTZ preset (position) can be set for cameras in the event of Sensor activation.

PTZ event related preset can be synch only with Sensor/Motion/Video Loss events. If there are multi events occur to a camera at same time, it takes events in order of Sensor > Motion > Video Loss.

2-6-2. MENU > EVENT > Motion



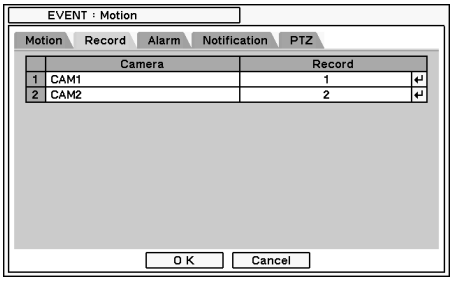


In Motion, system provides Motion Detection function. Set Motion Detection using Sensitivity, View and Area options.

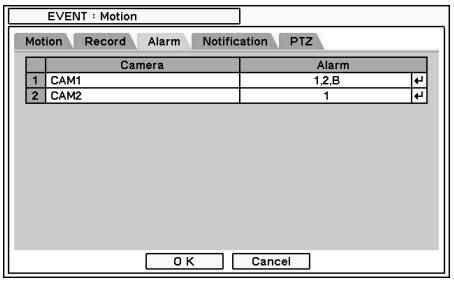
Sensitivity: Select motion sensitivity from very Low to Very High.
Area: Define the area for motion detection.

Press Setup under Area to define motions detection areas. The blocks indicate the area where is defined for motion detection

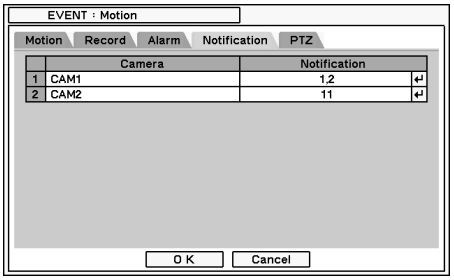
Select Block: Use arrow keys to move around a box. Select individual blocks to set motion zones. Use number keys to select and unselect blocks (When using a mouse, use a left button).
Clear Block: Deselect all blocks inside a box
Select All: Select blocks on entire screen.
Clear All: Deselect blocks on entire screen.
View: View the appearance of motion zones on screen when motions is detected.



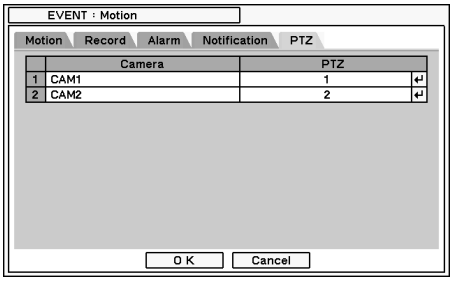
In Record, each camera can be connected to single or multiple motion detections from other cameras. Press ↵ to select cameras to be synchronized with motions detections.



In Alarm, each camera with motion can be connected to single and multiple alarms. Press ↵ to select alarms to be connected to cameras for motion events.

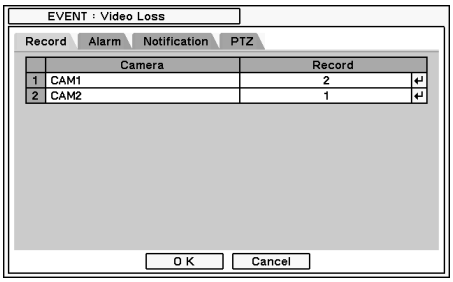


In Notification, each camera with motion can be synchronized with single and multiple callback or emailing sites. Press ↵ to enter callback or email address to be synchronized with cameras for motion events.

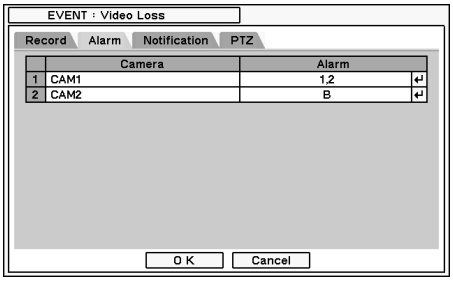


PTZ can be connected to Motion event using its preset function. If Motion is detected, PTZ moves to the position where event and positions are pre set.

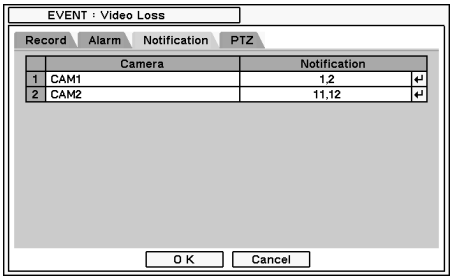
2-6-3. MENU > EVENT > Video Loss



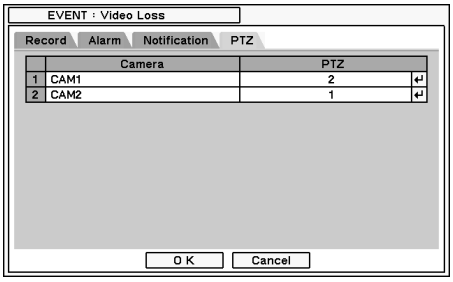
In Video Loss, single or multi cameras can be synchronized for event recording when there is a video loss. Press ↵ to select single or multi cameras to be synchronized with cameras for video loss.



In Alarm, each camera with video loss can be synchronized with single and multiple alarms. Press ↵ to select alarms to be synchronized with cameras for video loss.

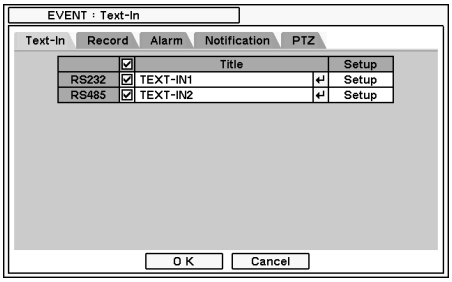


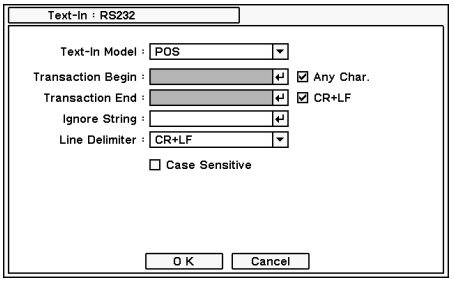
In Notification, each camera with video loss can be synchronized with single and multiple callback or emailing sites. Press ↵ to enter callback or email address to be synchronized with cameras for video loss.



PTZ can be sync with Video Loss event using its preset function. If Video Loss occurs, PTZ moves to the position where event and positions are pre set.

2-6-4. MENU > EVENT > Text-In

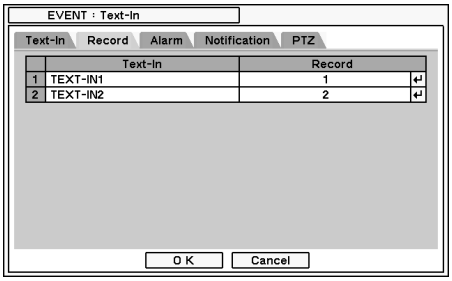


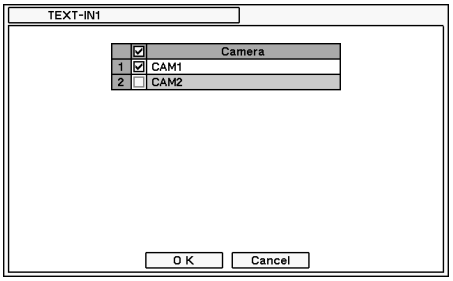


The system allows Text In from POS/ATM machines.

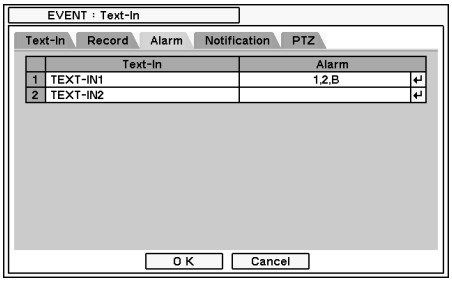
Note: For use of POS/ATM, the system must support generic ASCII code.

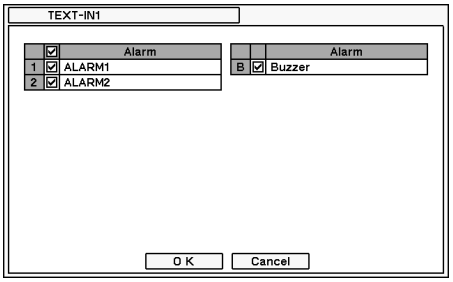
Text-In Model: Select Text-In model from the list
Transaction Begin: Enter a word which the transaction info to be displayed on screen as a start.
Any Character: Check Any Character to start display a text with any character as a start.
Transaction End: Enter a word of last line where the transaction info to be displayed on screen as the end. If you want additional lines to4 be displayed after the transaction end, select more line options.
Ignore String: Enter a word to ignore strings includes selected word.
Line Delimiter: Enter a symbol or a word to distinguish the end of lines.
Case Sensitive: Select Case Sensitive option if distinguish a word with case sensitivity.



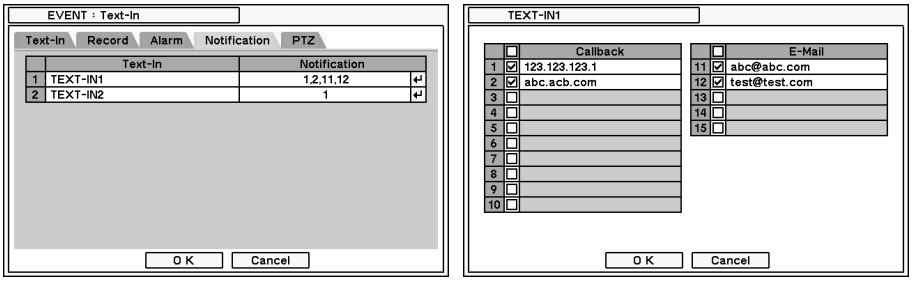


In Record, text event can be synchronized with single or multi camera record. Press ↵ to select camera(s) to be synchronized with text event. If RS232/RS485 Port is being used at the same time, it has to be used for different cameras. For example, if RS232 is set for cameras 1~12, RS485 should be set with 13~16. They can't share same cameras.

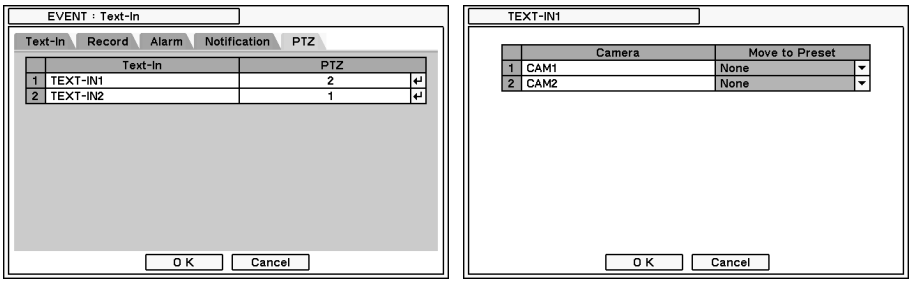




In Alarm, text event can be synchronized with single or multi alarms. Press ↵ to select alarms to be synchronized with text event. If B is selected, system will buzz on alarm detections.

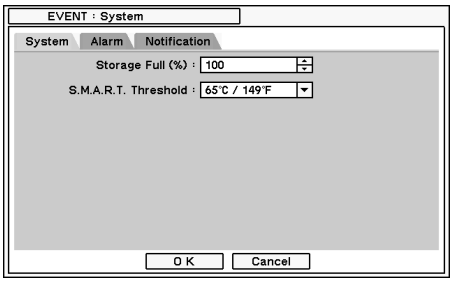


In Notification, text event can be synchronized with single and multi callback or emailing sites. Press ↵ to enter callback or email address to be synchronized with text event.



In Text In, each text input can be synchronized with single and multiple cameras. Press ↵ to select cameras to be synchronized with text inputs.

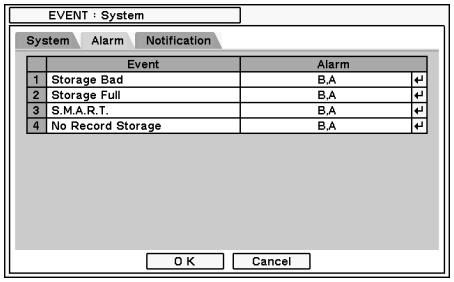
2-6-5. MENU > EVENT > System

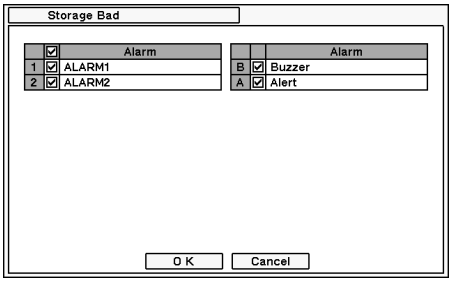


In System, S.M.A.R.T function monitors storage conditions such as Temperature, Conditions and Recording.

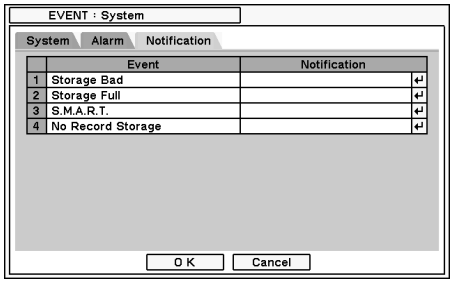
Storage Full option can be set to notify a message for the indication of HDD storage usage level. Warning message can be notified in various ways as described below.

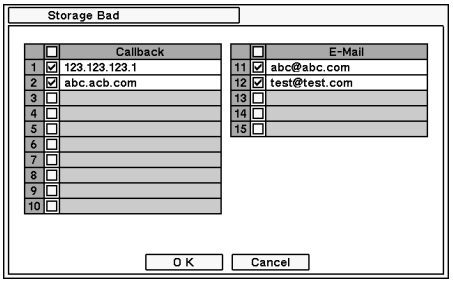
S.M.A.R.T Threshold allows to preset tolerable temperature level of storage. If HDD temperature increases over preset temperature, it will notify a user in various ways according to following settings.





In Alarm, each system event can be synchronized with single and multiple alarms. Press ↵ to select alarms to be synchronized with each event. If Alert is selected, system will pop up a warning message on screen.

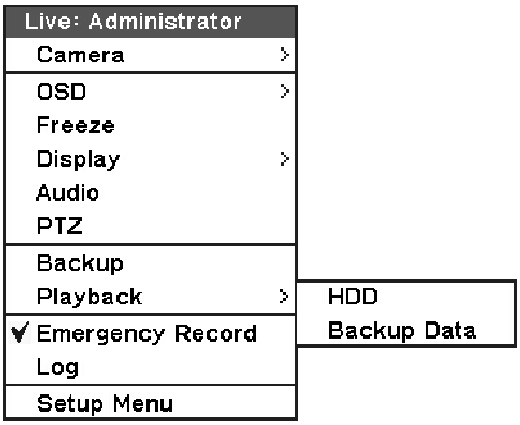


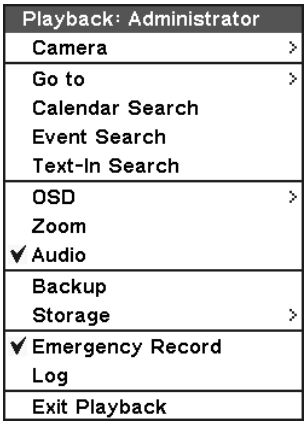


In Notification, each system events can be synchronized with single and multi callback or emailing sites. Press ↵ to enter callback or email address to be synchronized with system events.

3. Playback

The system provides various playback menus to search recorded data. Please click right Mouse button on Search Mode and select the storage type. If backup data is selected, the data on external HDD can be searched.





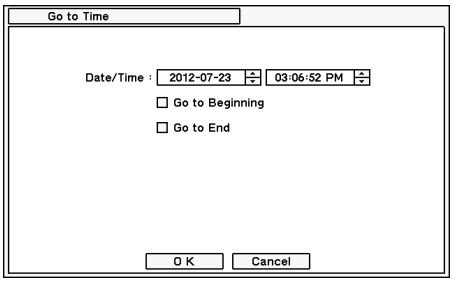
Camera : Select camera no
Go to : Search recorded data by time/date. Move to the beginning or end of recorded data. Also search data by 5/10/15/30/60 seconds backward from the current time of search
Calendar Search : Search by date from calendar
Event Search : Search by event from event list
Text In Search : Search by text-in event from event list.
OSD : Select OSD display option
Zoom : Zoom in image by x2, x4, x8
Audio : Select Audio outs

Backup : Select backup or Clip Copy option
Storage : Select HDD or Backup Data to playback

Emergency Record : Start Emergency Recording
Log : Select System/Event log

Exit Playback: Exit Search Mode and return to Live Mode

3-1. Go to Time

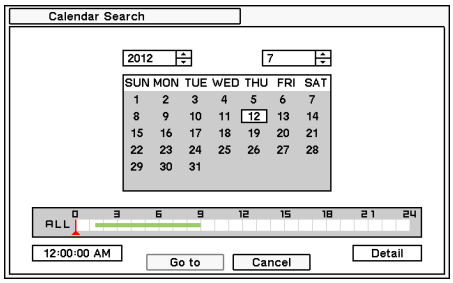


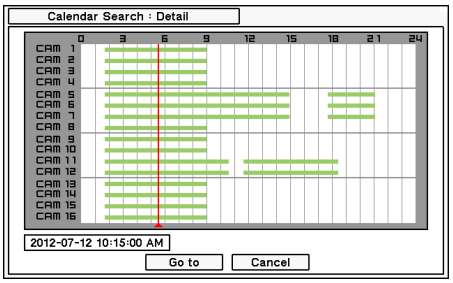
Select Go to Time to search recorded data by time/date. Set time/date using button. Go to Beginning and End options are selectable to search the very first and last data recorded. Once desired settings are completed, press OK to begin playback.

Go to Beginning : Move to the very first recorded data.

Go to End : Move to the latest recorded data.

3-2. Calendar Search

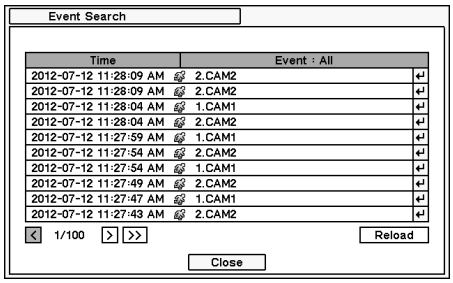


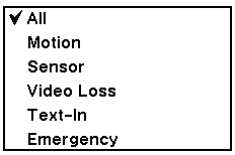


Calendar Search provides easy graphical search by displaying numbers (dates). Dates with recorded data will be highlighted. Once you select the date, it will display record time table below. The numbers on the top of the table shows the time frame in 24hours format, and titles on the left indicate cameras numbers. The color bar shows the full information of recorded data on the selected date. Move the indicator (line) to select specific recorded time of the selected date. For a detail display of recorded data please press Detail.

Once desired settings are completed, press Go To to begin playback.

3-3. Event Search





Event Search provides easy search by event list recorded. Select the date and type of event to find specific data. Press Event: All section on the type of the list to display event search options.

All: System displays every event

Motion: System displays every events related to Motion

Sensor: System displays every events related to Sensor

Video Loss: System displays every events related to Video Loss

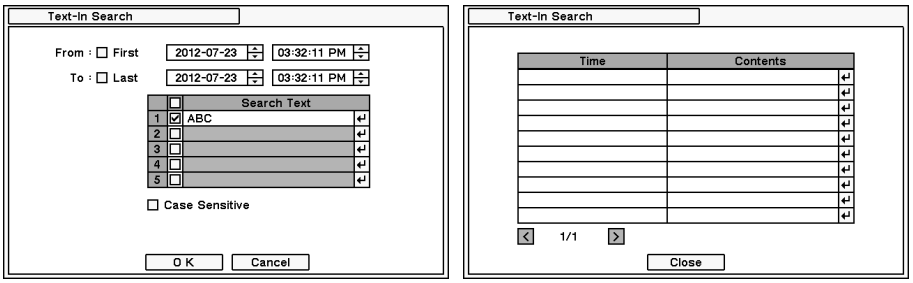
Text-In: System displays every events related to Text In

Emergency: System displays every events related to Emergency Recording

Once find specific list of event, move up and down button to highlight the log and press it to

playback the event data.

3-4. Text-In Search

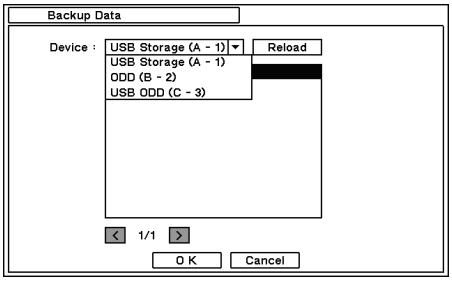


Text In Search provides easy search by transactions. Search for Time and Transaction information. Press Search for detail information.

From: Set beginning time to start search or select First for search from the first data.
To: Set end time to end search or select Last for search to the last data.
Search Text: Enter any words to search text data include the words.

Once entering all the search information, press OK to start Text In search.

3-5. Backup Data Playback



Backup files on backup media can be played on DVR. Insert the media with backup files and select a file to playback it on DVR.

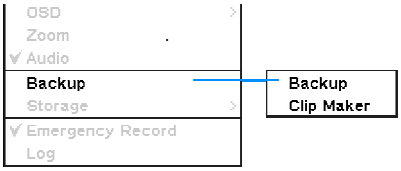
3-6. Playback Control

R.Play: Reverse Playback
Step Backward: Go to the previous image
Pause: Freeze or Stop current image
Step Forward: Go to the next image
Play: Play the data at normal speed

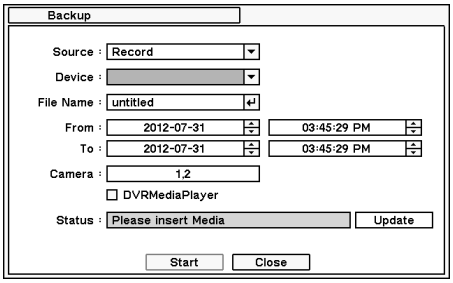
To control the backward and forward playback speed, press on ◀ or ▶ repeatedly. Playback speed can increase up to x32.

4. Backup

Recorded data can be backed up on USB Flash memory. Select backup or Clip Copy option during Search or Live mode by selecting Backup.



4-1. Backup



In the BACKUP, the recorded data can be selected for backup to USB devices.
Press USB Device ▼ to select the type of USB Device connected to the system.
Select date & time period of data to be backup using ▲▼ button.
Select Camera number to be backup or All to backup all the data recorded during the selected period. To back up recorded Audio with video data together select Audio.
Status shows capacity of the device being prepared for backup, and it will show backup progress during backup.

The files saved (backup) in DVRMediaPlayer (.exe) format allows multi camera backup and the files would not require any specific codec for playback on PC. To open and play a file saved in DVRMediaPlayer (.exe), double click the file and it will automatically be played on Internet Explore window. This fuction is supported only on Internet Explorer 7.0 or above.
Note: The backup process could be slowdown if the system is being monitored/playback on the remote using the client program during the backup process.

Note: "DO NOT remove back up media while data backup is being processed. It may cause critical damage to either media or system if backup media is removed during the backup process."

Note: During the CD or DVD back up the ODD door could be opened and closed as a process of back up. Please do not remove CD or DVD during the back up in any cases until it is done completely.

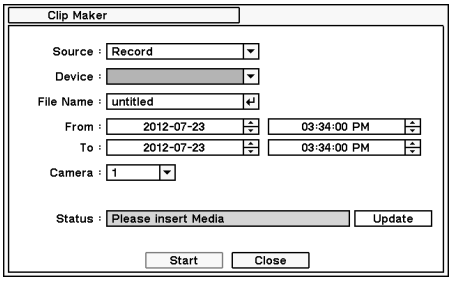
4-2. Instant Backup

Press backup button to start Instant Backup during the playback. Instant Backup window will appear when press backup button during the normal playback mode. Select Device, File Name, Audio and press Start to continue the playback and backup. The Backup Icon will appear on the screen during the Instant Playback. Press backup button one more time to stop and complete Instant Backup.

Note: "DO NOT remove backup media while data backup is being processed. It may cause critical damage to either media or system if backup media is removed during backup process."

Note: Playback speed will be slower than usual while instant back up is processing.

4-3. Clip Maker



Clip Maker allows to create single channel backup file which can be played on PC. Select Clip Maker option on the pop up menu during the live or pause mode on the playback.

Select backup option for Clip Maker. Press Start button to create Clip Maker. Use Quick Time player to play the file created using Clip Maker

Note: Clip Maker file cannot be played on other programs such as Window Media Player.

Chapter 4. Remote Software

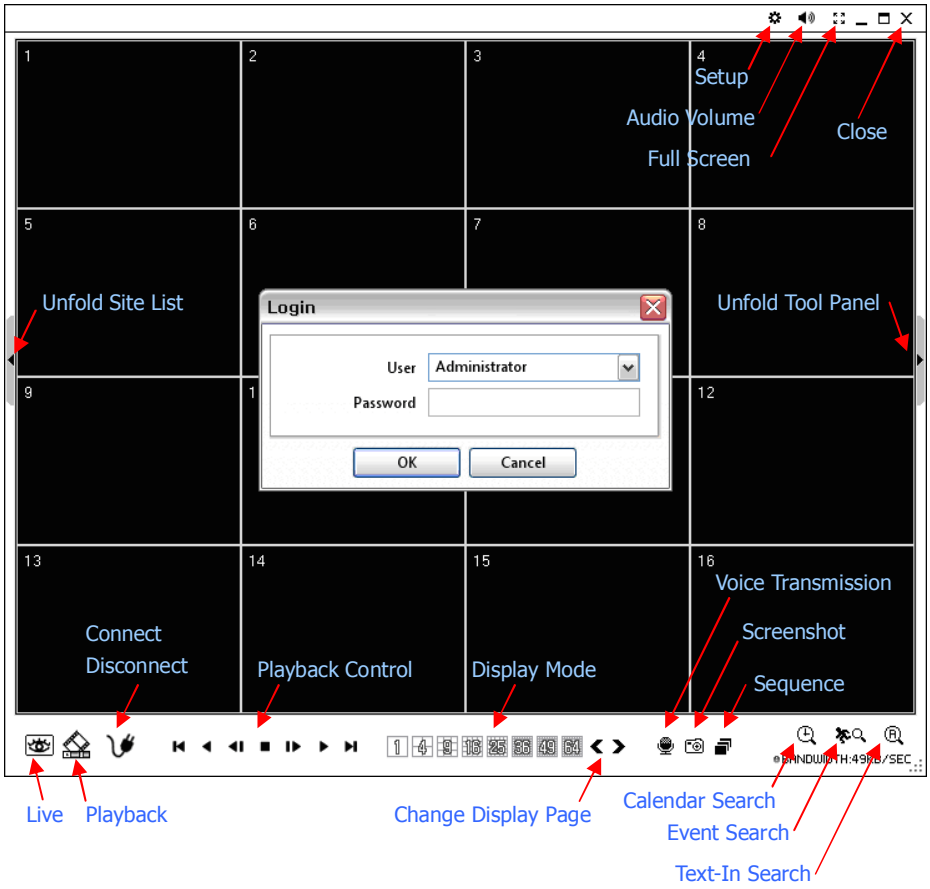
1. Using Remote Software

***Note*: Before using the remote software, refer to **a customer card** in the package to download the software. Please install the software on your PC once you download it.**

1-1. Starting the Software

Double click on the program icon on PC to run the remote software.
Main screen of the remote software appears as shown below.

Note: A minimum resolution should be more than 1024 x 620; and a recommendable one is over 1280 x 1024.



The Log In window will appear when the remote software starts. Select user level as each user will have different authority level over the system control depend on the preset up. Enter OK once the user level is selected as the default password is '**none**'.

Live: Click the image to enter the live mode.
Playback: Click the image to enter the playback mode.
Connect / Disconnect: Click button to connect a site as live or playback mode.

Playback Control: Use buttons to control playback images. (Stop, Move by Image, Play, Rewind/Forward, and Move to First/End)

Display Mode: Select display modes. (single screen, 4, 9, 16, 25, 36, 49, 64 and full screen)
Change Display Page: Change Display Mode to Previous or Next page in camera order.

Voice Transmission: Click button to transmit remote voice to the local DVR.
Screenshot: Capture the current screen and save it as a image file.
Sequence: Display images on pre selected sites in sequence mode.

Setup: To change set up on the Remote Software S/W or a remote DVR.
Audio Volume: Click Audio icon to select audio volume and mute options.
Select a camera to receive Audio of the selected camera (highlighted in border lines).
Full Screen: Display image on full screen mode.
Close: Click the icon to close the software

The below options are only selectable under playback mode.

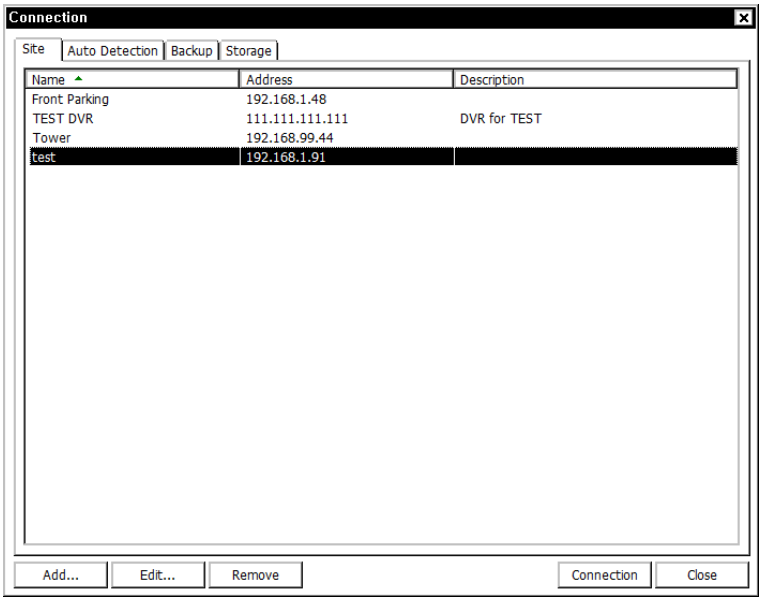
Calendar Search: Search data on a graphic calendar and time table.
Event Search: Search data using recorded event logs.
Text-In Search: Search data using recorded Text-In data from POS/ATM device.

. **Backup**: Shows backup options as below:
- Save as MP4: Save the recorded data in MP4 file format.
- Backup: Backup the recorded data.

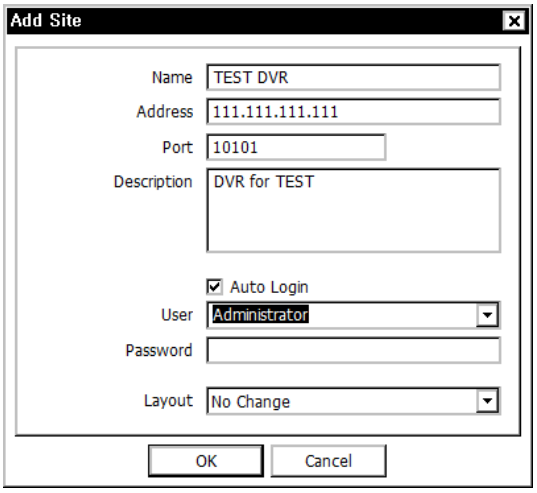
Storage: Select a storage type installed in the connected DVR. Either recording HDD or Archiving HDD can be selected for playback.

1-2. Site Set Up

Click [Connect] button to display registered remote locations or add new locations.



Click [Add] button to add remote location and required information.



Name: Enter Site Name

Address: Enter IP address or domain name of the site

Port: Enter port number if there is a specific port to be set for the software

Description: Enter the description of the site

Auto Login: If do not want the Log In window to be popped up every time starting the remote S/W, check Auto Login to skip User/Password authentication process

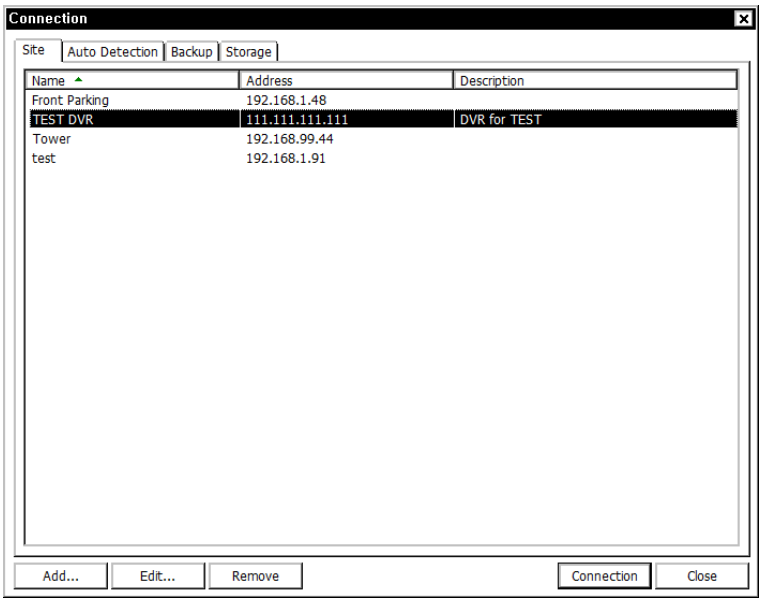
User: Select the type of user from the list

Password: Enter the password of DVR

Layout: Select desired display layout for the site when it is connected

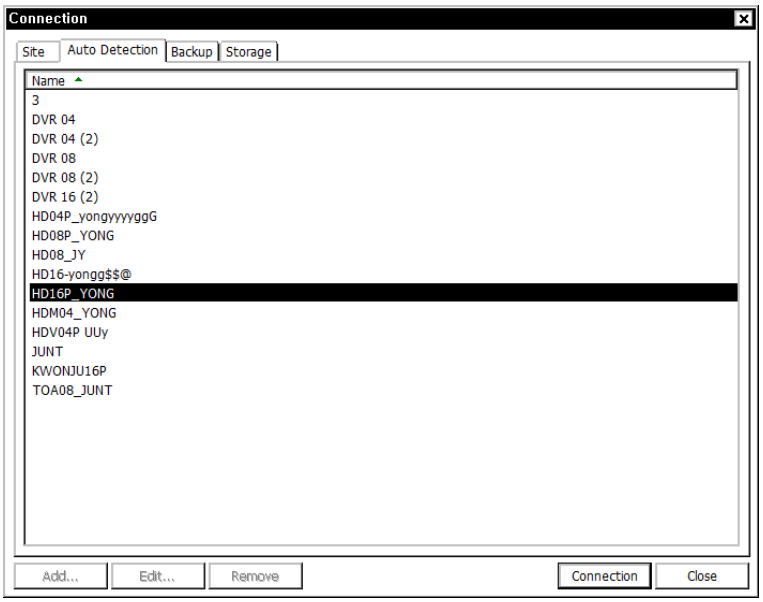
Note: Layout can be changed after begin connected using the display option on the menu.

Click [OK] to save information and complete the registration. Double click the location or Highlight it and click [Connection] button to get connected to the site.



The DVR and Client program on PC start searching each other once they are on the same local network. The Auto Detection menu shows the DVRS detected on the same local network.

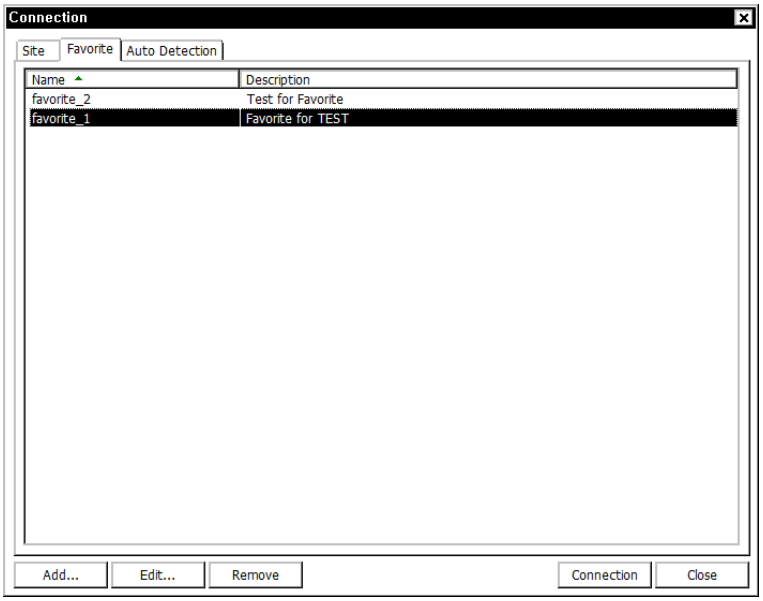
Note: This function is only available on local networks. No settings are required if both DVR and PC use DHCP. But if the Static IPs are used, DVR and PC need to have same subnet info and with different static IP addresses.



Note: Auto Detection finds DVRs on the local network automatically. To use this function, Apple® Bonjour® needs to be installed in PC. Please refer to http://www.apple.com/bonjour for more details and download.

1-3. Favorite Set Up

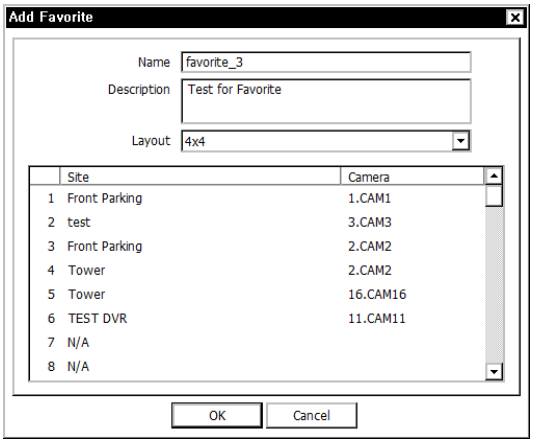
Favorite function allows multiple site management. Up to 64 different cameras and sites can be monitored and managed on one screen. Select [Favorite] tap.



Click [Add] button to group multiple sites as one favorite group.

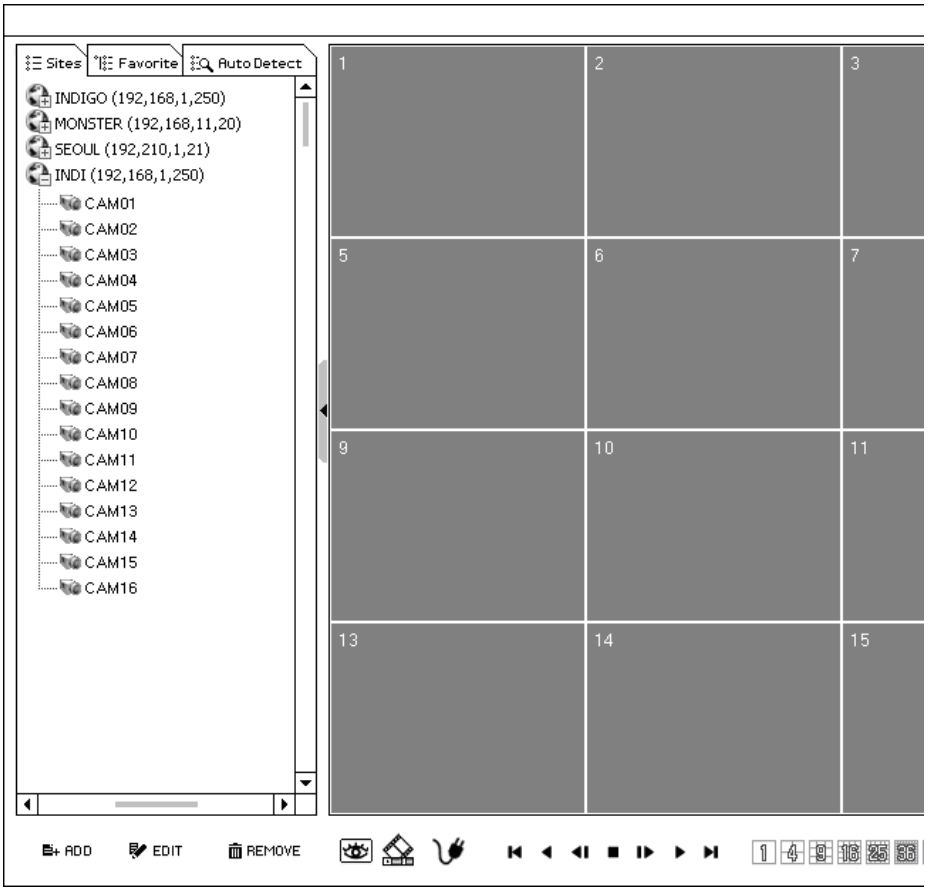
Enter the group name and description. Up to 64 different cameras or sites can be grouped and displayed together. Select sites and cameras from the drop down list by clicking [▼] button.

Note: Sites should be registered under 'Site' menu before setting the favorite.



1-3. Site List Panel

The remote sites also can be registered on Site List Panel. Use ADD , EDIT , REMOVE buttons on the bottom to register and managed the remote sites and favorite sites.



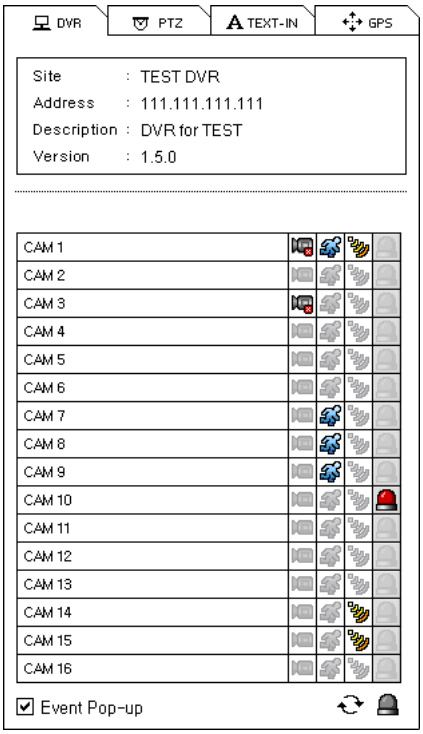
Drag and Drop the listed sites on to the display section to connect the sites. Each camera can be dragged and dropped to arrange independent displays. This allows making a display by a group of cameras from the different sites.

Once the group of cameras from the different sites has been set, move Favorite tap to save this new setting as a new Favorite site.

Note: Each camera can be dragged and dropped onto displays only in Sites. (not Favorites and Auto Detection)
Note: Camera positions (CH locations) can be exchanged or move around by Drag & Drop.

1-4. Tool Panel

1-4-1. DVR Status



DVR tap shows Video Loss, Motion Detection, Sensor Detection status of currently connected remote site. User can activate a remote alarm on DVR Status options.

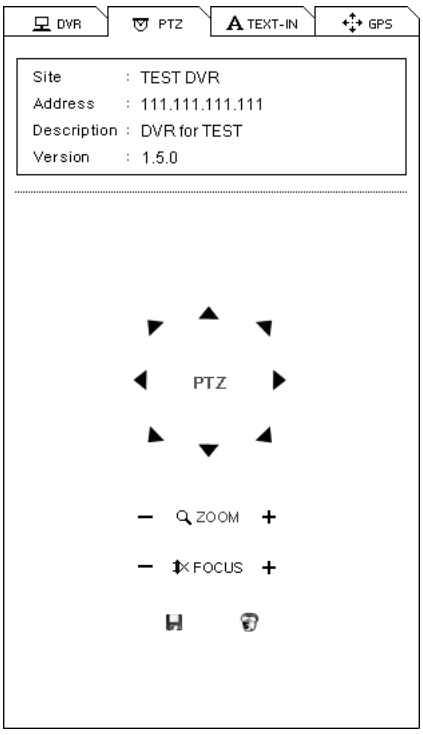
Reload: Refresh the latest DVR status info.

Reset Alarms: Turn off activated Alarms on the DVR.

Event Pop-up: Set event pop up option. A camera will be displayed in full screen mode in case of event. Set Pop up duration at Setup > System > Event Pop-up Duration.

Note: Event Pop-up will not be activated even it is checked when DVR status menu is hidden or other menu options (e.g. PTZ control) are being used.

1-4-2. PTZ

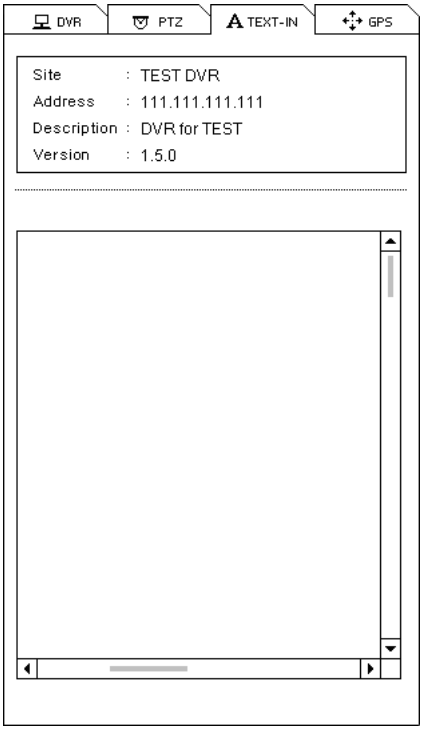


The second tap of Tool Panel is PTZ controller. Once DVR is connected in Live mode and select the PTZ view CH, it will display the site info and activate the PTZ controllers.

Set Preset: Save PTZ camera's current location. Up to 16 Presets can be saved

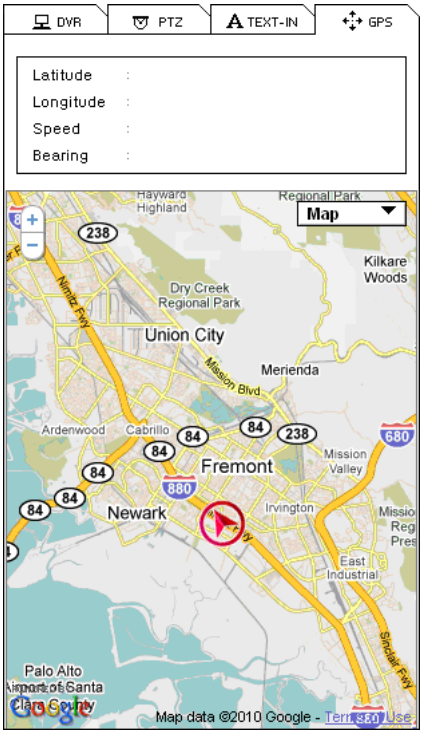
Move to Preset: Move PTZ cam based on the preset settings.

1-4-3. TEXT-IN



Displays recorded TEXT-IN info. TEXT-IN tap is activated under playback mode only.

1-4-4. GPS



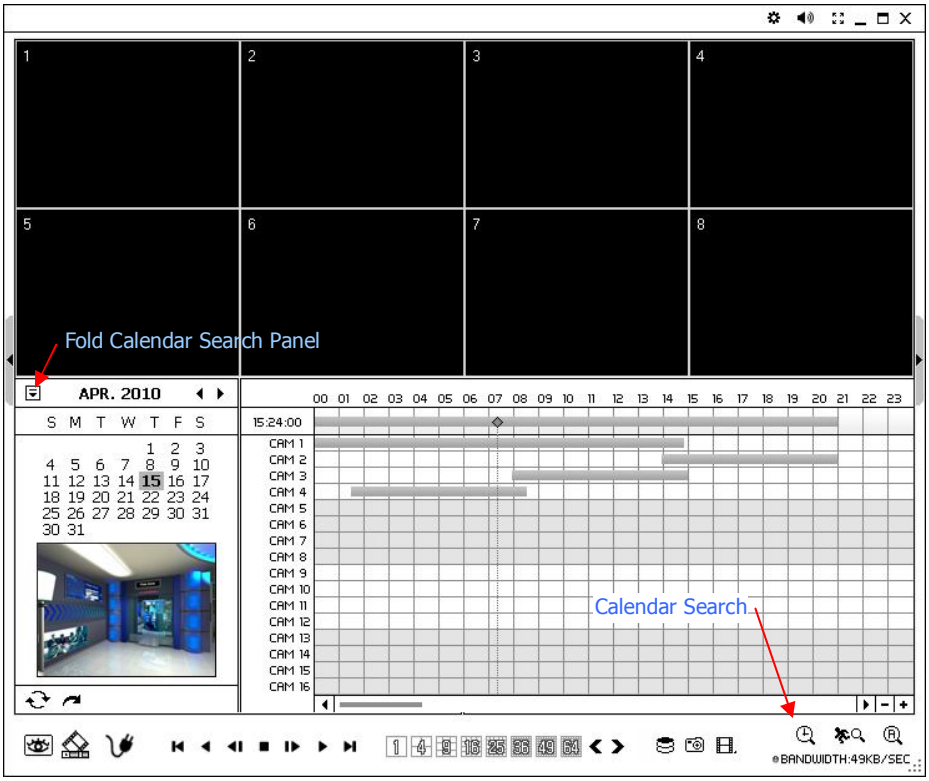
GPS is for Mobile DVR tracking under playback mode. GPS data is recorded with images using built in GPS on Mobile DVR. This data will be displayed on Google Map under playback mode.

Note: the GPS function isn't used for this DVR

2. Remote Playback

2-1. Calendar Search

Calendar Search Panel appears when a site is connected under playback mode as shown below. Time bar will appear once the date is selected and the image preview will appear when the specific time is selected on the time bar.



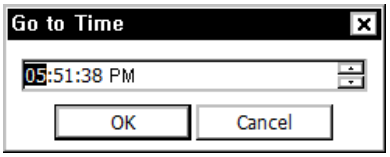
Use below buttons to control the playback image.

Playback Control Button

- Beginning
- Reverse Play / Rewind
- Step Backward
- Stop
- Step Forward
- Play / Fast Forward
- End

Go To Time

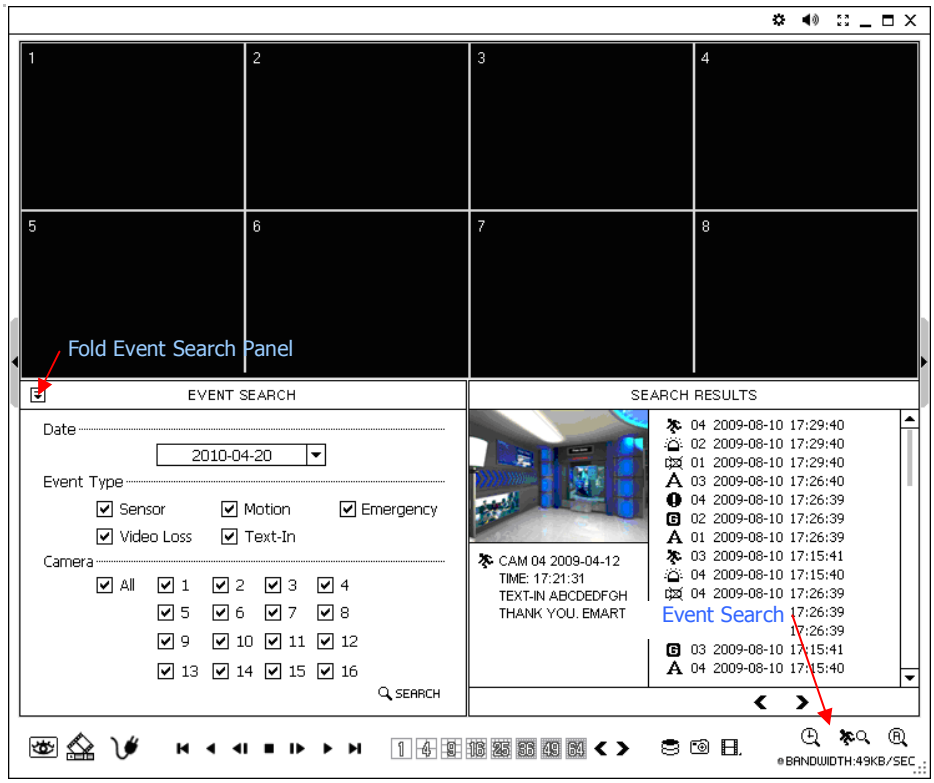
• Click on icon to display time search window. Enter specific time to search the data



• Click on icon refresh and update the calendar info.

2-2. Event Search

Select Event Search on the bottom of the screen to open Event Search Panel. Enter Date, Event Type and etc and select SEARCH button to retrieve the search results.

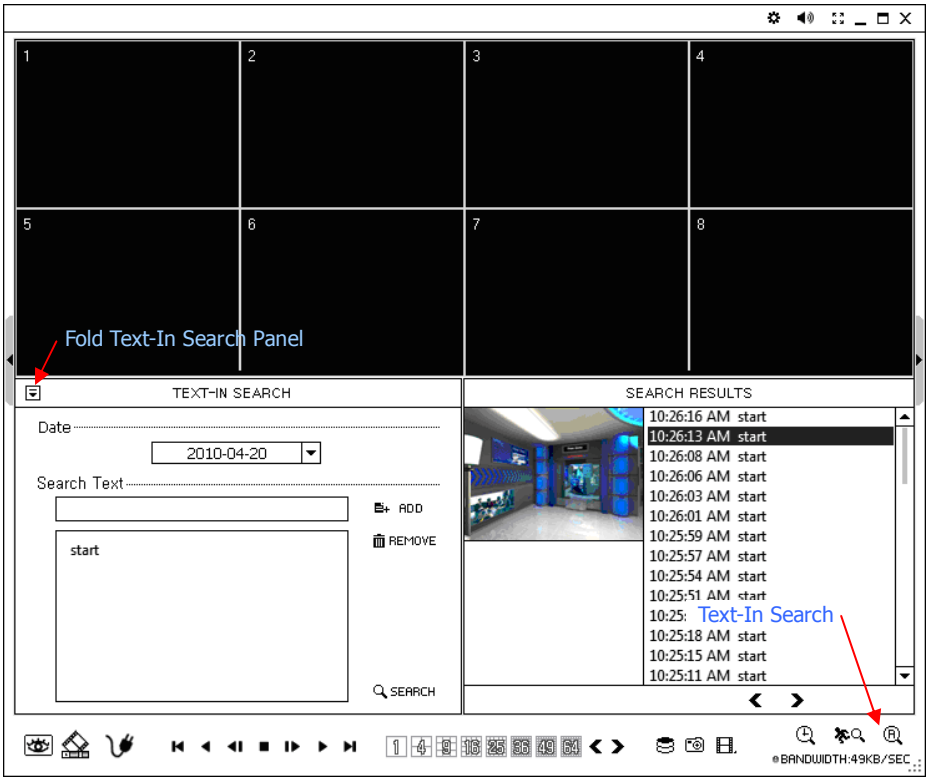


Select an event from the list for playback. Search trough the list using < > buttons.

Select the date of event search for from the Date list. Select All or specific camera numbers for related event search. Type of events can be selected from the list for detail and effective search.

2-3. Text-In Search

Select Text-In Search on the bottom of the screen to open TEXT-IN Search Panel. Enter Date and Text and select SEARCH button to retrieve the search results.

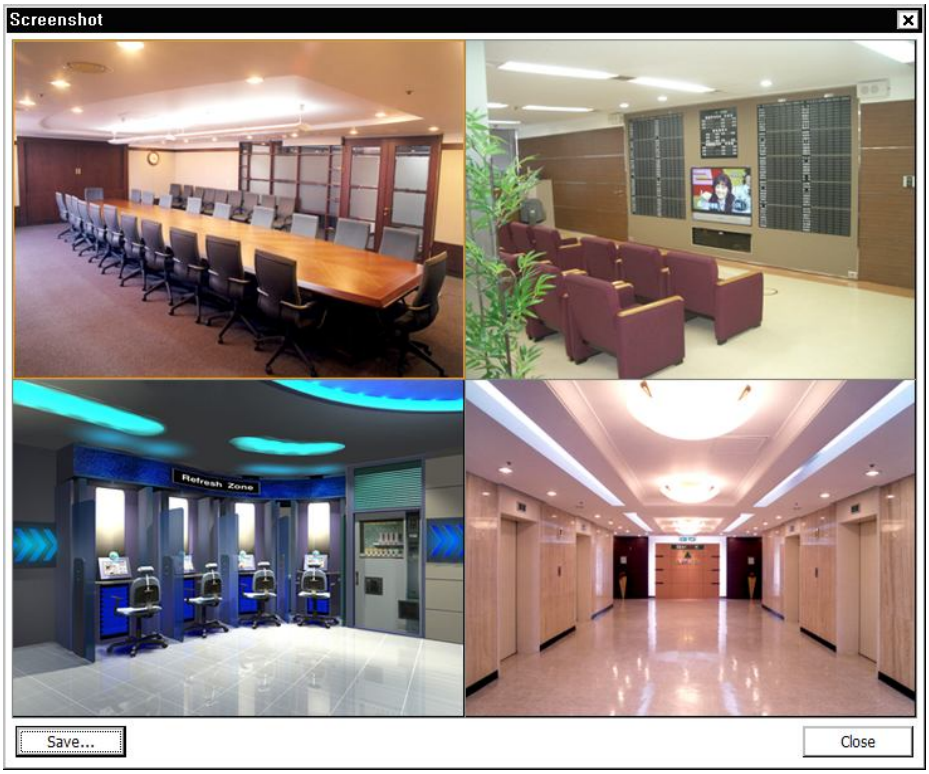


Select an text-in event from the list for playback. Search trough the list using < > buttons.

2-4. Saving recorded data

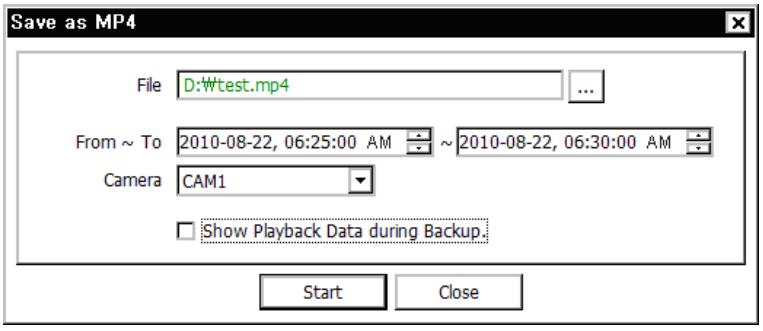
Screenshot

Select button to capture the current image during the playback as show below. Select Save... button to save the image. The Image can be saved in JPEG, BMP and PNG format.



Save as MP4

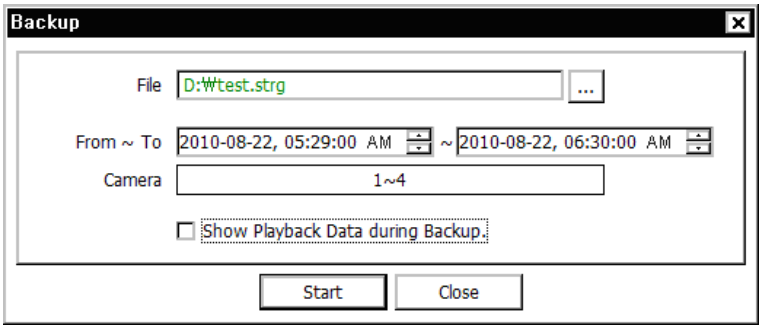
Select button during the playback and select "Save as MP4" to open the window as shown below to save data in MP4 format.



- Enter file name and select Location.
- Select the time period.
- Select Camera number. Press Start to create MP4 file.

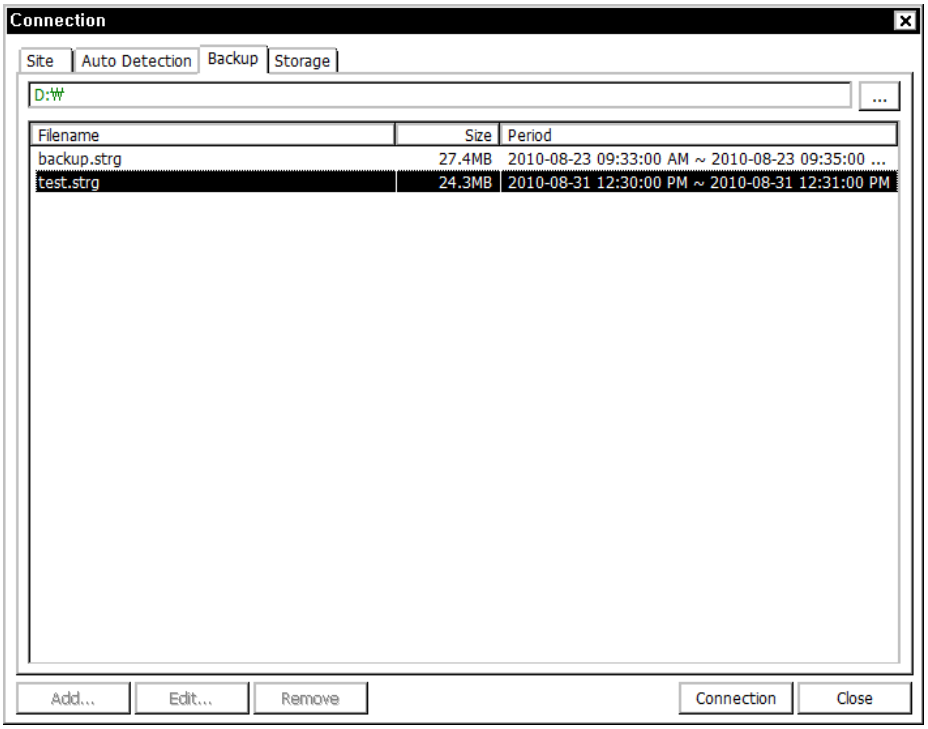
Backup

Select 🎞 button during the playback and select "Backup" to open the window as shown below to save data in own video format.



- Enter file name and select Location.
- Select the time period.
- Select Camera number. Press Start to create Backup file.

2-5. Play Backup Data

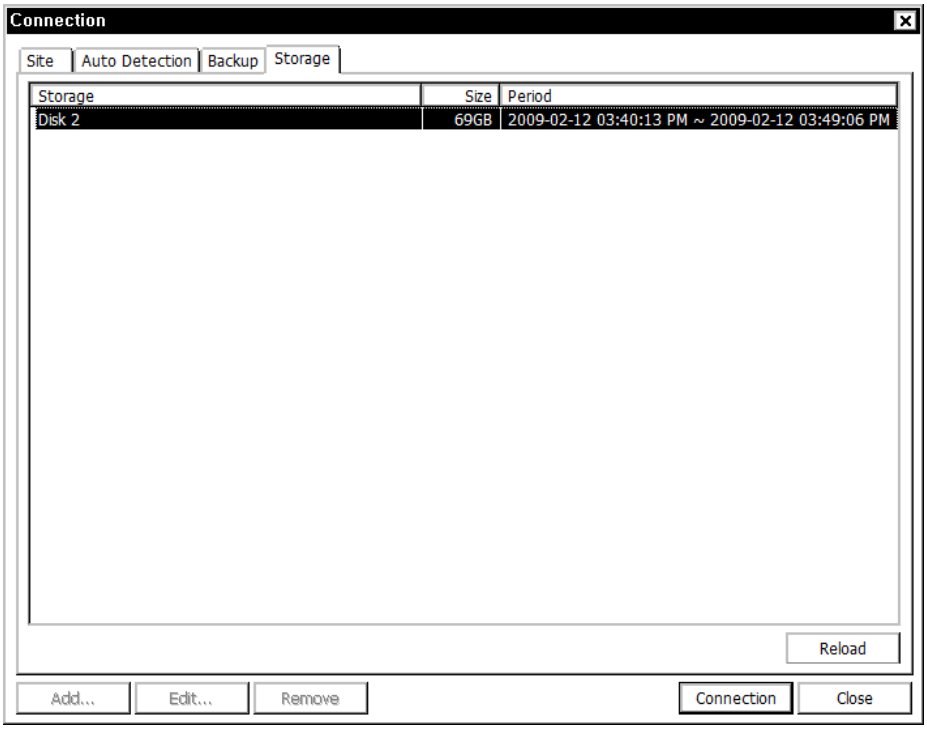


Backed up data from the local site can be played on the remote software.

Select 🖐 button during the playback and above window will appear. Select the location where the data is saved. Select the file and click Connection to play the video.

Note: Recorded Audio can be played on single screen only.

2-6. Play Independent HDD Data on PC



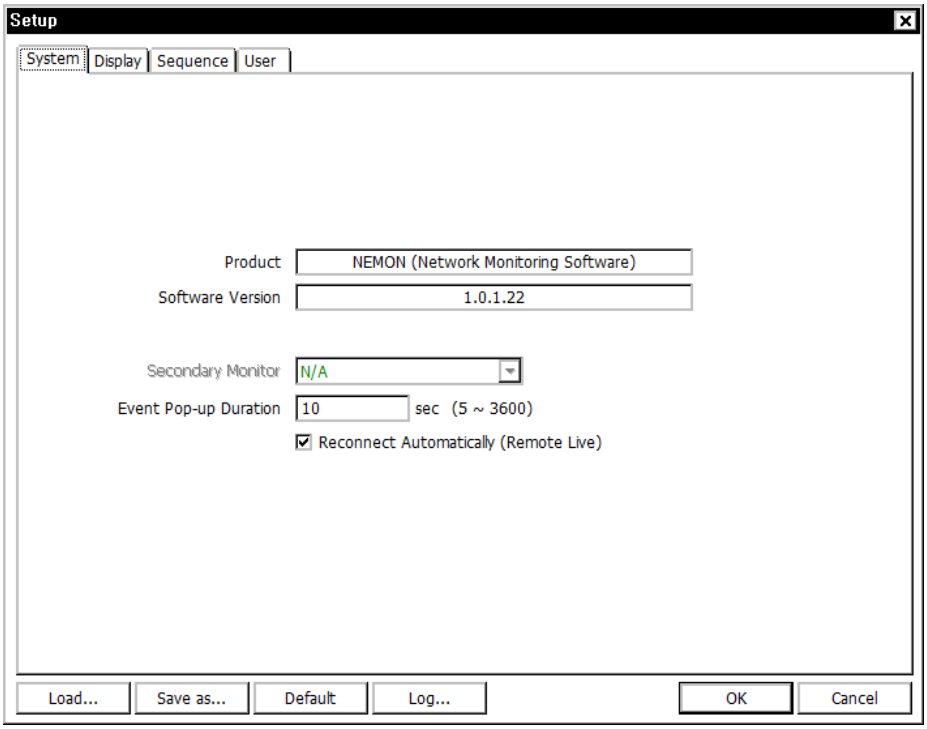
Independent HDD (removed from a DVR) data can be played on PC using the remote software. Have the HDD connected to PC using a SATA to USB connector cable. Make sure the HDD is connected to PC properly

Select button during the playback. Click [Storage] tap to display HDD information (if HDD is not shown please click [Reload] button to refresh the list). Double click the list or highlight and click [Connection] button.

3. Setup

3-1. Remote Software Setup

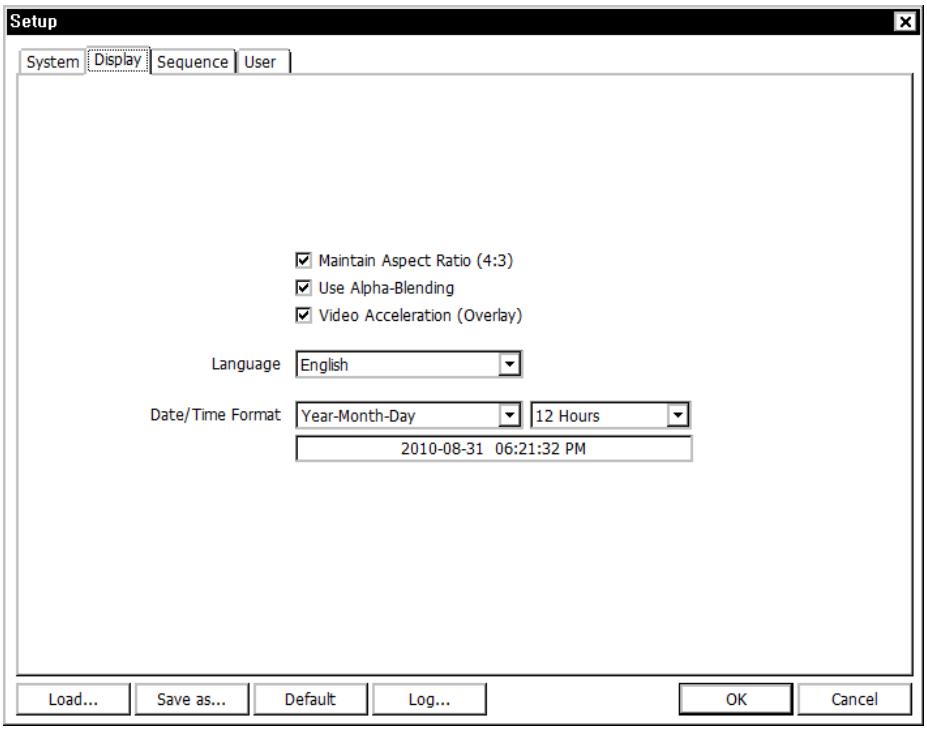
Click on ⚙ and Setup to enter the remote software setup menu.



Product: Displays general information of the S/W
Software Version: Displays current S/W version
Secondary Monitor: Select the secondary monitor when using multi monitors on PC
Event Pop-up Duration: Set the time duration for a camera display when it is displayed in full screen mode in case of event.
Reconnect Automatically: Set auto reconnection on Live if the connections is ended by any chances.

Load: Load saved data for settings for remote software
Save as: Save current settings of remote software
Default: Set default settings of remote software
Log...: Displays the history of S/W usage

Click on Display tap to enter display setup menu.

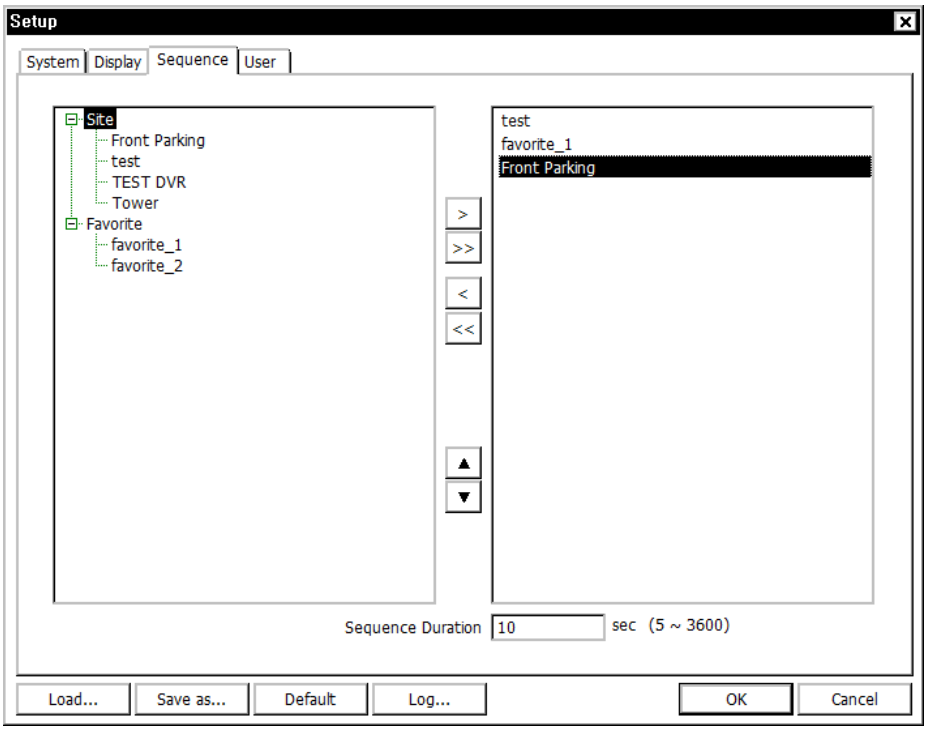


Maintain Aspect Ration (4:3): Keep 4:3 ration on the remote software display screen
Use Alpha-Blending: Enables alpha-blending effect to S/W UI
Video Acceleration: Video Acceleration option enhances natural live image display on the client S/W. Please do not select this option as it may cause improper live image display. Some PC graphic card does not support and comparable with Video Acceleration option.

Note: There are some graphic cards do not support such functions. In this case, unselect the option as it might result in abnormal system operation

Language: Select language option for the remote software
Date/Time Format: Select Date/Time Format for the remote software

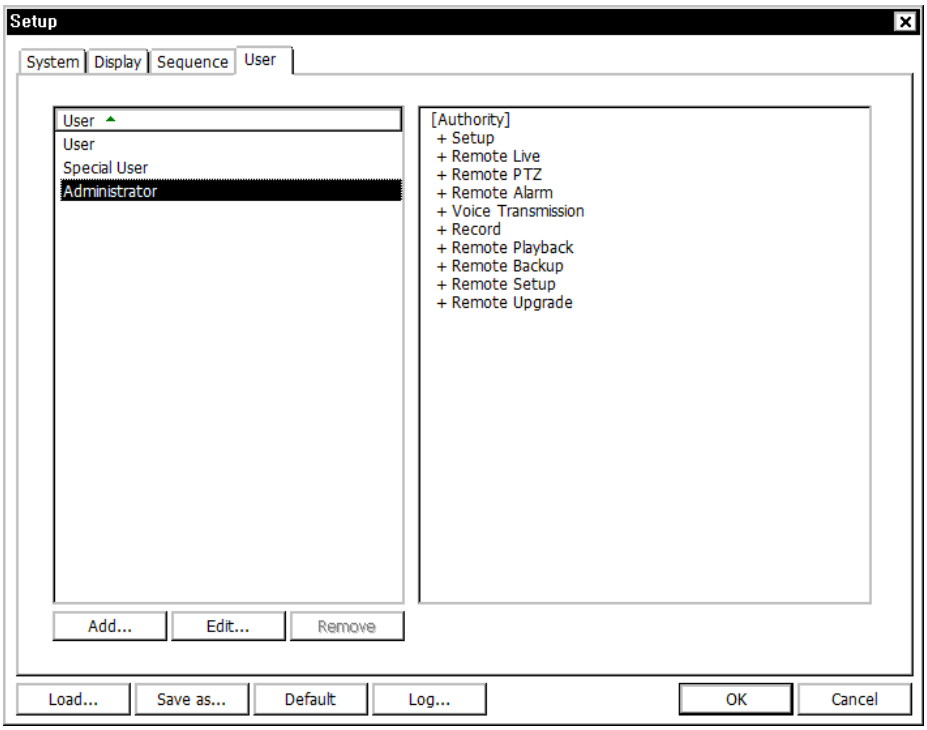
Click on Sequence tap to enter sequence setup menu.



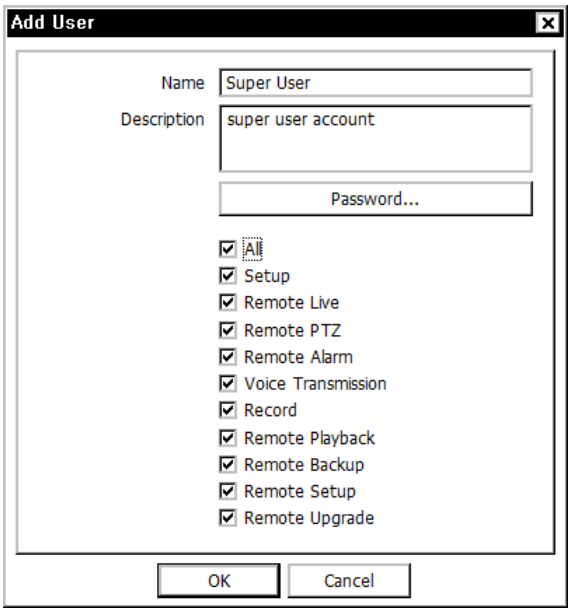
Set sequence mode and sequential sites from registered individual or Favorite sites. Click the site and select [>] button to add the site into the sequencing list. [>>] button will move the all sites to into the sequencing list.

Sequence Duration: Set sequence interval time.

Click on User tap to enter user setup menu.

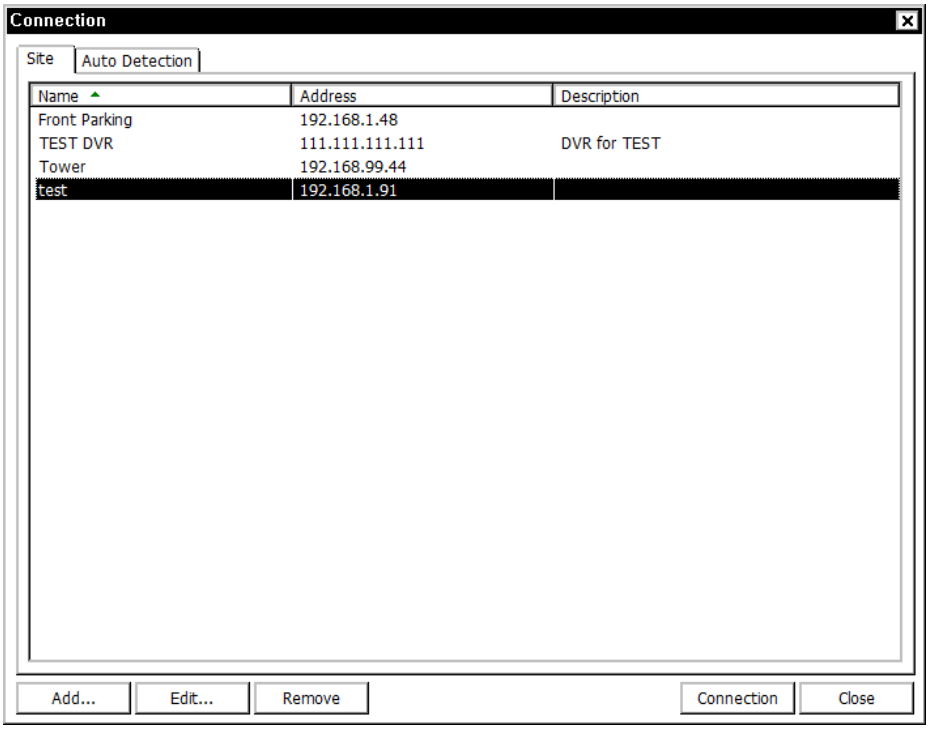


Register the remote software users. Each user needs to use the password they set in registration when they log in. Select Add to start new user registration.

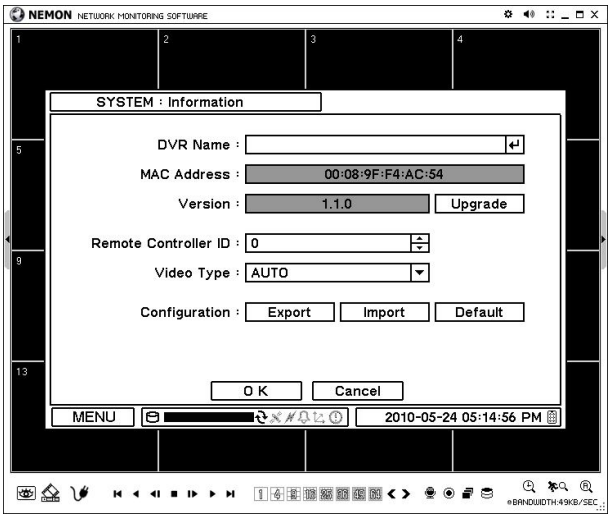


3-2. Remote DVR Setup

Click on ⚙ and [Remote Setup] to enter remote setup menu.



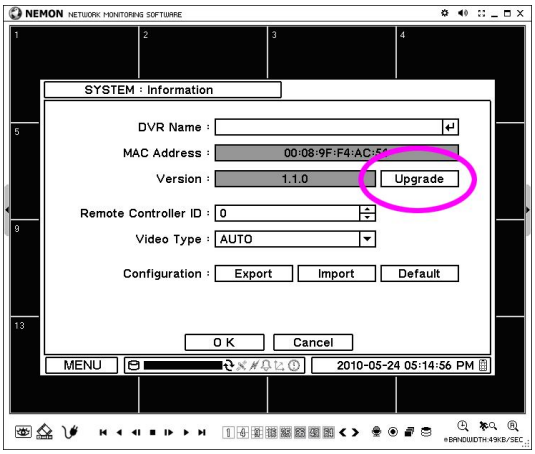
Select a DVR for setup and select Connection button. Setup menu will appear as show below once it is connected

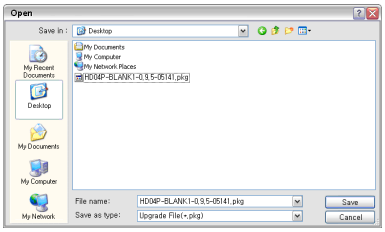


Note: The remote software provides interactive setup system that allows easy local DVR settings from remote sites. It gets exactly same menu and options as the local system.

3-3. Remote Upgrade

The system upgrade can be done through the remote software program on PC.





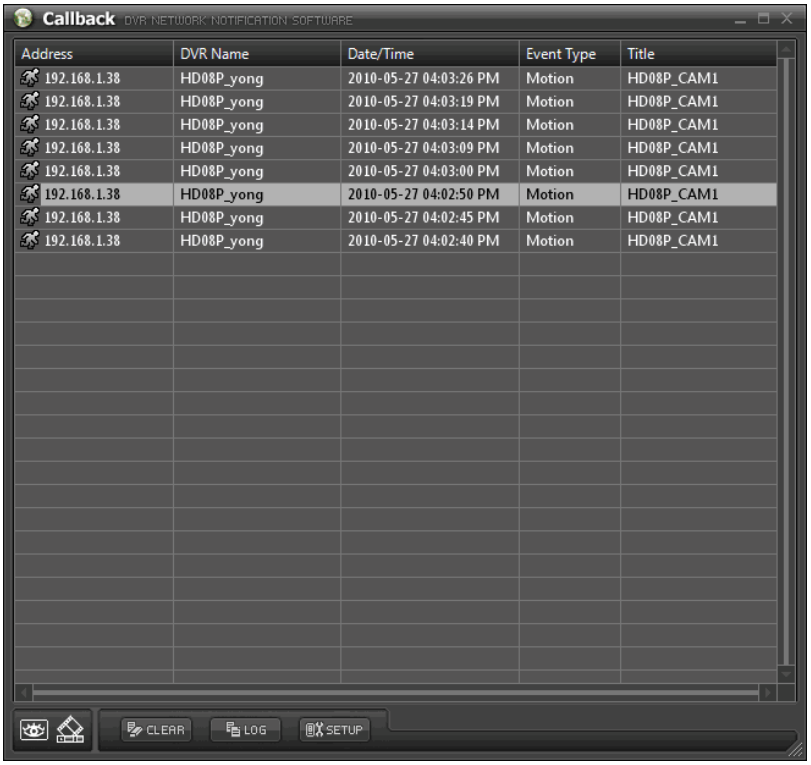
- Click on ⚙ and [Remote Setup] to enter remote setup menu.
- Select Information under System.
- Click [Upgrade] next to S/W version to find a file for upgrade
- Select the file location and the file to upgrade the system.

Note: Please do not close down the remote software or power off a computer until the system upgrade is completed.

4. Callback

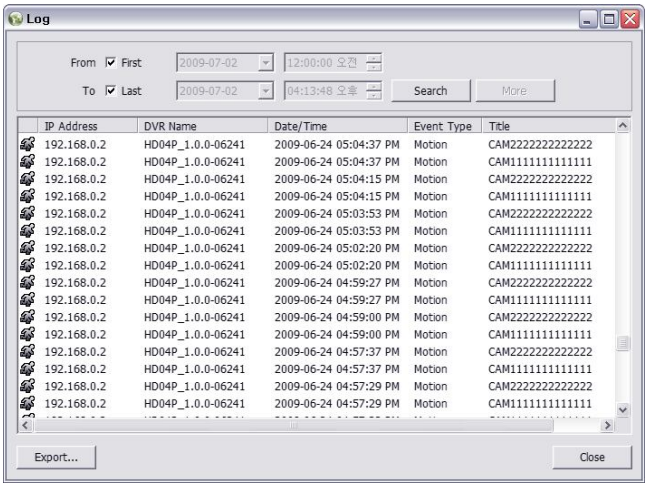
Start-> Program -> remote software folder -> Callback
Callback icon will be displayed on the bottom right of Window once the program starts.

Callback message will be displayed/notified as shown above.
Click Callback icon to display main window of Callback as shown below.


Callback DVR NETWORK NOTIFICATION SOFTWARE
Address
DVR Name
Date/Time
Event Type
Title
192.168.1.38 HD08P_yong 2010-05-27 04:03:26 PM Motion HD08P_CAM1
192.168.1.38 HD08P_yong 2010-05-27 04:03:19 PM Motion HD08P_CAM1
192.168.1.38 HD08P_yong 2010-05-27 04:03:14 PM Motion HD08P_CAM1
192.168.1.38 HD08P_yong 2010-05-27 04:03:09 PM Motion HD08P_CAM1
192.168.1.38 HD08P_yong 2010-05-27 04:03:00 PM Motion HD08P_CAM1
192.168.1.38 HD08P_yong 2010-05-27 04:02:50 PM Motion HD08P_CAM1
192.168.1.38 HD08P_yong 2010-05-27 04:02:45 PM Motion HD08P_CAM1
192.168.1.38 HD08P_yong 2010-05-27 04:02:40 PM Motion HD08P_CAM1
CLEAR
LOG
SETUP

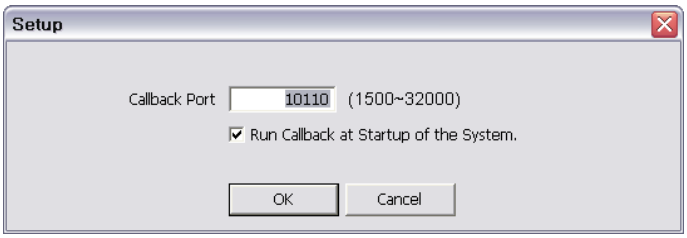
Select a log from the list and click Live or Playback icon image to connect related DVR.

Clear: Clear all the logs listed on Callback window
Log: Click Log button to display log search window as shown below.



Up to 100,000 log can be saved. 1,000 log lists will be displayed per search. Click More button to display next 1,000 logs. Click Export button to save searched logs in either txt or csv format.

Setup: Click Setup button to set a port for Callback. Check Run Callback at Startup of the System box to start Callback program automatically with Window.



Note: UDP port needs to be set (open) to transmit Callback if Firewall is being used.

Appendix A. Remote Access Using I.E.

DVR can be accessed remotely using Internet Explore. Execute internet explore program and enter DVR address (e.g. IP) to get connected.

Remote Log In page appears once connected to DVR. Enter ID, PW and Port information, and select Live or Playback mode to display desired remote control option. Please install Active X when Internet Explore displays Active X installation message.

Remote Monitoring

Remote Playback

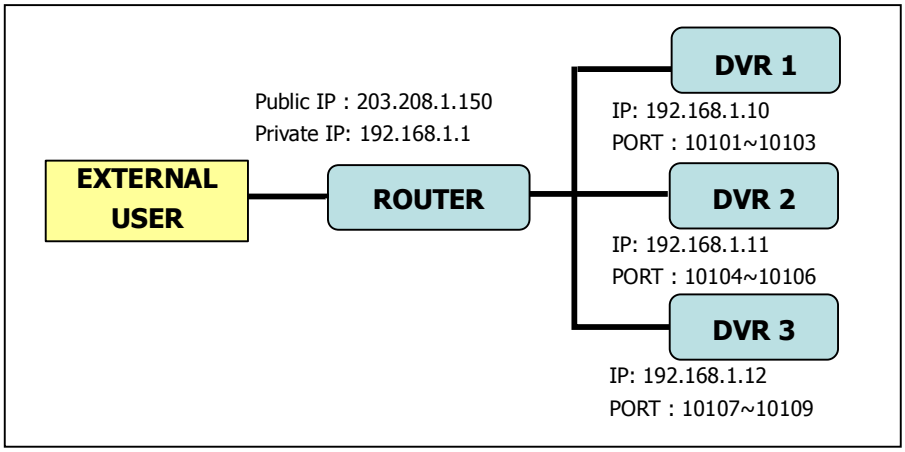
Please refer to the remote software manual if further instructions on the control option are needed.

Note: Web is supported only on Internet Explorer 7.0 or above.

Appendix B. How to set DDNS using router

(Except using public IP or connect with ADSL directly)

Make it easy to understand through the example as below. Please refer the Diagram and follow this instruction. For example, If you connect 3 DVRs through local Network.

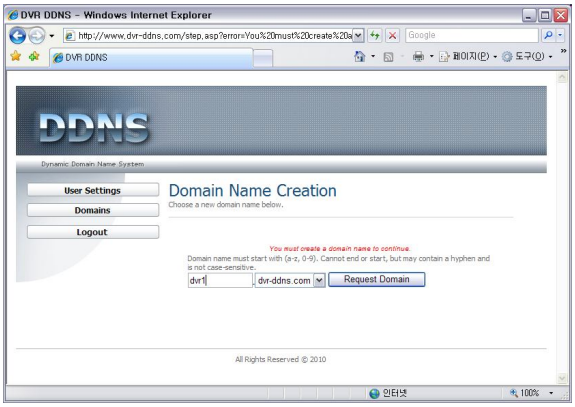


1. Domain Name Creation

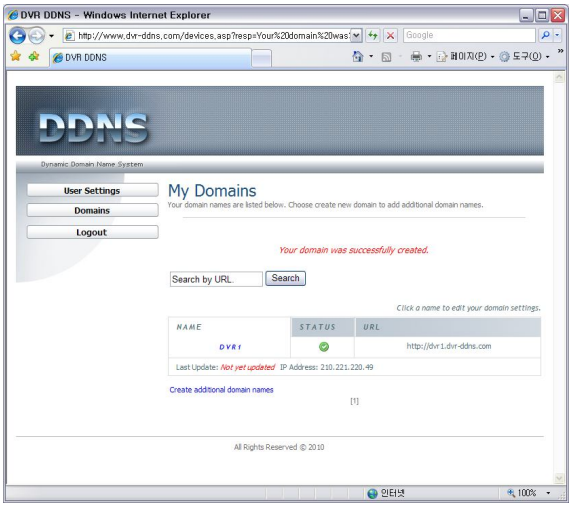
- Go to http://www.dvr-ddns.com/
- Click 'Sign up!' to make the Account.

- Fill out the registration information as below.
- Click 'Submit' to make the account.

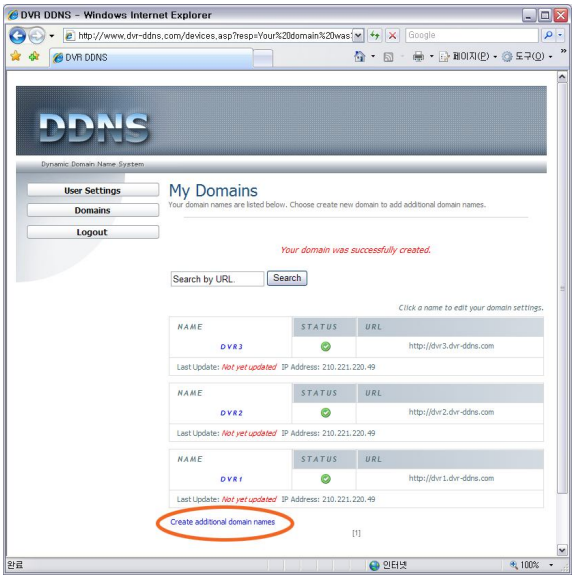
- Enter your domain name and click 'Request Domain' to create the domain name.


DVR DDNS - Windows Internet Explorer
DDNS
Dynamic Domain Name System
User Settings
Domains
Logout
Domain Name Creation
Choose a new domain name below.
You must create a domain name to continue.
Domain name must start with (a-z, 0-9). Cannot end or start, but may contain a hyphen and is not case-sensitive.
dvr1
dvr-ddns.com
Request Domain
All Rights Reserved © 2010

- You can see the registered dome name "dvr1.dvr-ddns.com"

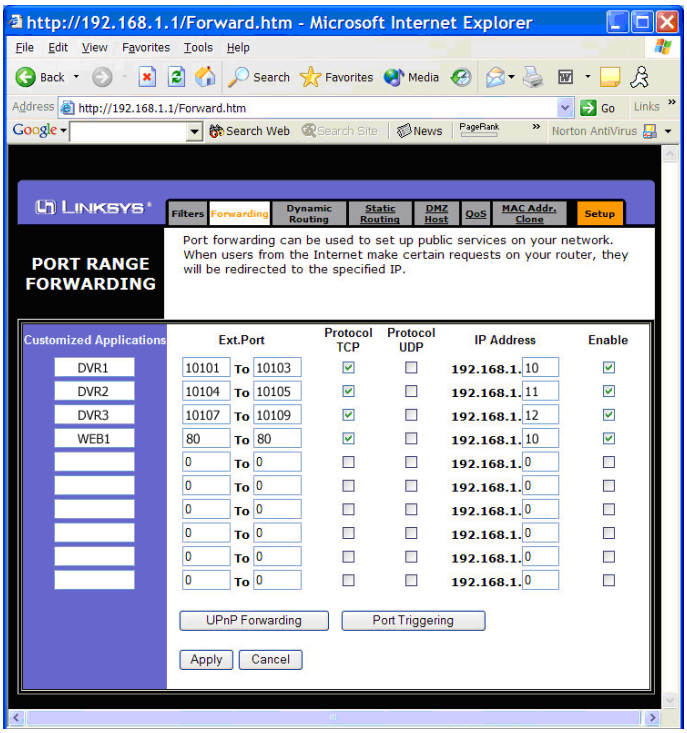


- You can create 3 domain names for one account.
- Click "Create additional domain names" to make another domain name.



2. Router Configuration

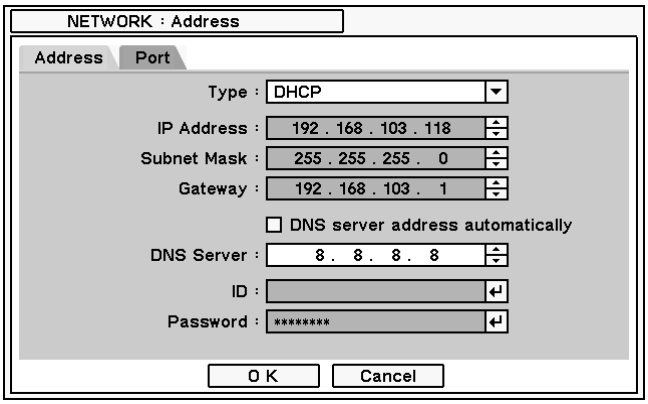
- Insert the gateway address on the explorer to connect the homepage for the Router.
  - Go to "Port Forwarding" Menu. (The picture below is for particular Router.)


http://192.168.1.1/Forward.htm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://192.168.1.1/Forward.htm
LINKSYS
Filters Forwarding Dynamic Routing Static Routing DMZ Host QoS MAC Addr. Clone Setup
PORT RANGE FORWARDING
Port forwarding can be used to set up public services on your network. When users from the Internet make certain requests on your router, they will be redirected to the specified IP.
Customized Applications
Ext.Port
Protocol TCP
Protocol UDP
IP Address
Enable
DVR1 10101 To 10103 192.168.1.10
DVR2 10104 To 10105 192.168.1.11
DVR3 10107 To 10109 192.168.1.12
WEB1 80 To 80 192.168.1.10
UPnP Forwarding
Port Triggering
Apply
Cancel

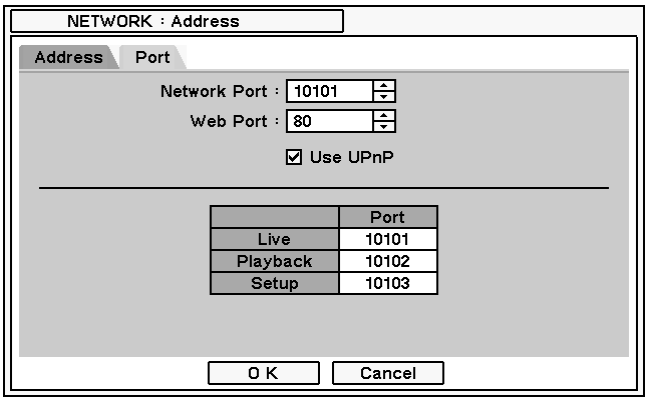
- Please insert the IP address and Port number for DVR in the Port Forward menu.
- The Port number which you insert at this point make it possible to distinguish each of DVRs
- Specify the WEB port number to access the DVR with Internet Explorer. Default port number is 80.

3. DVR Configuration

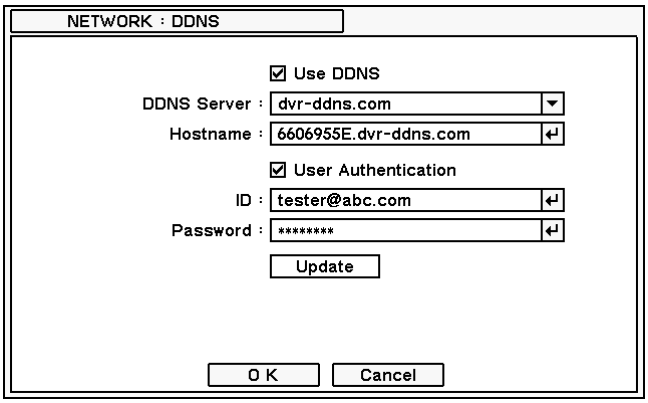
Example of DVR Network setting.



Select Static IP option and enter following options accordingly. The system should be allocated with individual IP address.



Make sure the ports for DVR are all set accordingly or set network ports according to DVR port settings.



DDNS can be used once the system is registered on DDNS server. ID and PW are required for the registered server authentication.

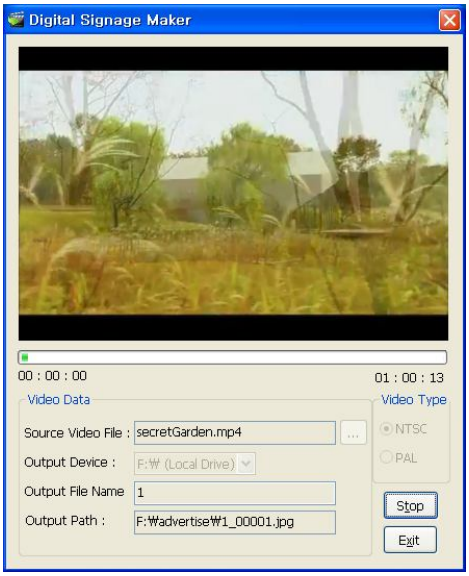
Appendix C. Digital Signage Maker

Digital Signage Maker converts any video files into DVR's Digital Signage format (JPG).

Digital Signage Maker Options and Limitations. (Before/After Conversion)

	Video File	Digital Signage File
Conversion	Video Files	JPG
File Name	No Limits	*Filename_00001.JPG, Filename_0002_JPG ~*
File Size	No Limits	256KB per each JPG File
Video Type (Size)	No Limits	Select either NTSC (704 x 480) or PAL (704 x 576)
FPS	No Limits	15 FPS only
Supported File Extensions	All File Extension except JPG, BMP, and JPEG is supported	JPG
Supported Codecs	MPEG(Moving Picture Experts Group) MOV(QuickTime) AVI(Audio Video Interleaved). WMV DAT ASF MP4 Etc.	JPG

1. How to use Digital Signage Maker



a. Select Source Video File

Files with extensions such as JPG, BMP, JPEG are not supported.
Please refer to above list for right file formats.

b. Select Output Device

Existing Logical drive or Removable device is displayed as Drive Name.
DeviceName₩advertise is a default file folder name that MUST be changed or renamed.
If the ₩advertise folder is already created, it doesn't make a new folder and overwrite the existing one.

c. Enter Output File Name

Enter file name. The file name is automatically created with numbers in order as follow:

E.g. filename_000001.jpg, filename_000002.jpg and ……..

d. Select Video Type

The file can be saved as NTSC(704 x 480) or PAL(704 x 574) according to Video Type. But this does not affect the display resolution.

e. Click Start Button

Click the start button. Play time and End time of Video File are shown under progress bar.
The Video conversion process will be displayed on the window.
If Stop the process during the conversion, it will end and complete the conversion process up to the stopped point.

F. Import Digital Signage File into DVR

Create a folder by name of 'advertise' and same the files in that folder in USB flash memory. Files must be saved in the folder and the folder name should be 'advertise'. DVR will not recognize any other folder names. Once it is done, connect USB flash memory to DVR and follow Digital Signage instructions (Import) to use Digital Signage features.

(refer to Chapter 3. 2-3-4. Digital Signage for the detail)

Appendix D. NEMON Network Archive Instructions

1. Outline

NEMON Network Archiver is a Remote Archiving Program to keep recorded data from DVRs on remote sites via Network.

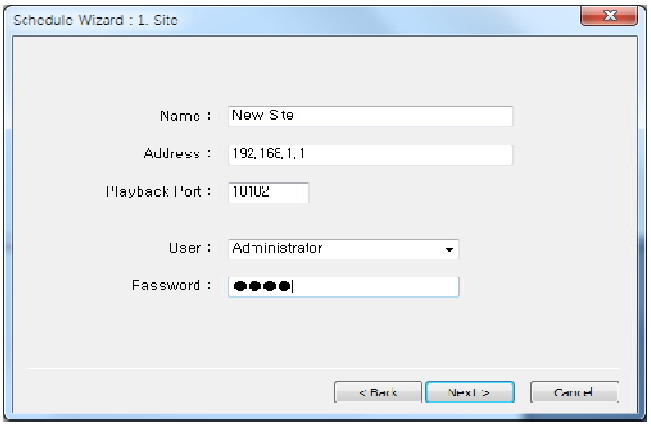
2. Feature

The S/W can be used without any additional upgrade of the DVRs.
Archiving can be simultaneously performed with multi sites registered.
The S/W offers flexible storage management by creating, adding or deleting Storage File as much as user wants regardless of the size and numbers.

3. How to use Network Archiver

Start Network Archiver(Archiving) by using Schedule Wizard(New Schedule).

Step 1) Entering Archiving Site address and following information for a site registration and log-in.

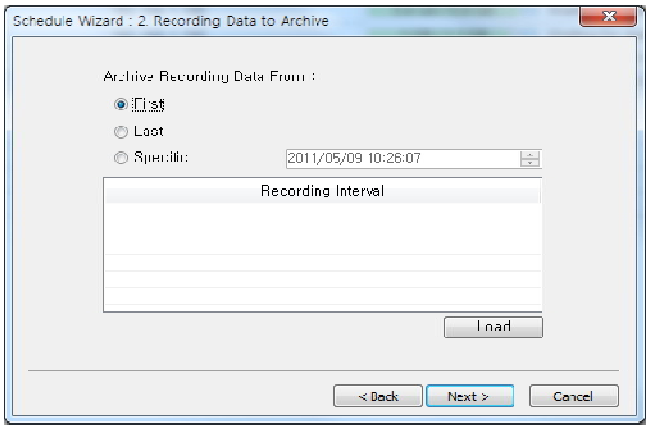


Name : Enter the Site name.
Address : Enter the Site address for Remote Archiving.
Playback Port : Enter Playback Port for the site. The default setting value is 10102 and it depends on the network setting of the local site.

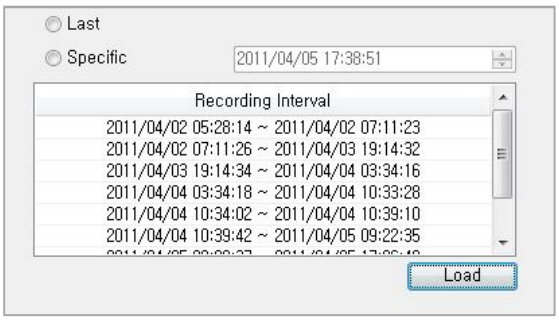
Note: Network Archvier requires to set Playback Port as a DVR for its network connection.

User / Password : Enter User and Password to log in. User has to be set with authority of Network Playback.

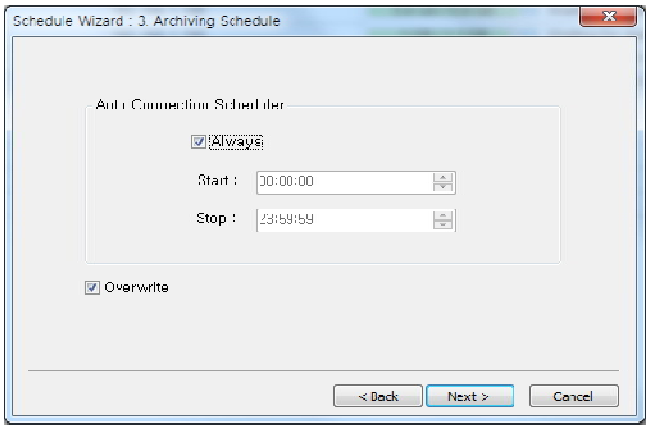
Step 2) Selecting a starting point of data for Remote Archiving.



First : Archiving from the very beginning of recorded data on DVR.
Last : Archiving from the latest recorded data on DVR.
Specific : Archiving from designated point by user. If data doesn't exist on the designated point, archiving will start from the latest data right after the designated point.
Load : Shows the status of recorded data on the DVR. It is displayed on Recording Interval List.



Step 3) Setting performing schedule for Archiving.

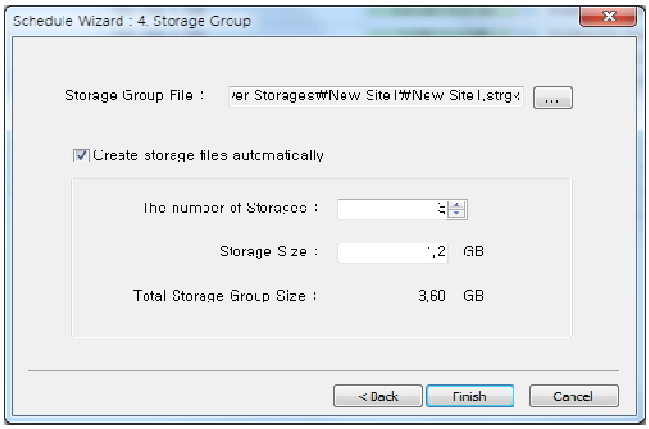


Auto Connection Scheduler : Set a time schedule for Archiving. Select a time for Start/Stop point, the system will automatically perform Archiving as the schedule set. If Archiving is failed due to any causes, it will continuously attempt to re-connect the sites. If Always is selected, Archiving will continue until user stops the operation.

Note: The S/W only attempts to reconnect the site when it is within the Archiving schedule as pre-set.

Overwrite : Select Overwrite to overwrite storage. When it is full, the oldest data is automatically overwritten by the latest data, and Archiving continues.

Step 4) Creating Storage Group. (refer to 4-D for the detail)



Storage Group File : Set name of new Storage Group File. The default directory is designated to "My Documents NEMON Network Archiver Storages₩<Site Name>₩<Site Name>.strgx".
Create storage files automatically : Select to determine whether to create storage files automatically or not. Storage File can be created individually by Storage Manager (refer to 4-D). The created file is saved in "<Site Name> <Numbers>.strg".

In case of creating storage files automatically, enter the following information.

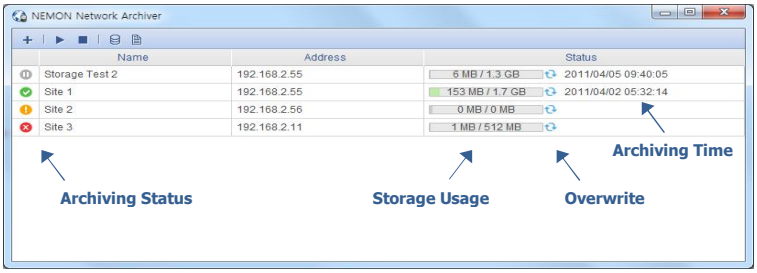
The number of Storages : The number of Storage Files to be created.
Storage Size : Size of each Storage File. The default setting value is 4GB. It needs to set up with at least 0.5GB or more.
Total Storage Group Size : Total Storage Group Size is equal to (The number of Storages) X (Storage Size).

Archiving will be performed once the setting is completed by clicking "finish" button. Use Schedule Wizard to add new Archiving option.

4. Set Up

A. Main Screen

Each schedule information is displayed on the main screen in real time.
(Overall information of Site and Log-in / Starting point of 'Archiving / Storage Group is considered and called 'Schedule'. Each list is considered as one 'Schedule'.)



Archiving Status : described with different icon designs. Please refer to below list to understand each icons for different Archiving .

	Archiving is On
	Site being connected
	Pause
	Archiving can't be continued
	Archiving Failed

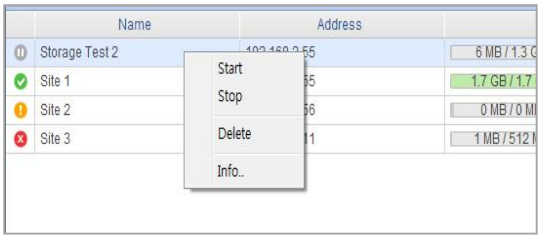
* The explanation of current status can be displayed with tool tip using a mouse.

Name : Site name designated at Schedule Wizard.
Address : Site address for Archiving.
Storage Usage : Current usage or full capacity of Storage Group used for Archiving. The color of bar graph shows its usage and the transmission status of data being archived.

	Data is being transmitted and Archived without any delays or latencies.
	Data is being transmitted and Archived with some delays or latencies.
	Archiving is stopped

Overwrite : If the icon is in blue, Overwrite option is on.
Archiving Time : It displays the current time of recorded data on DVR for Archiving.

If clicking right button of mouse on each list, it displays contextual menu for the Schedule operations.



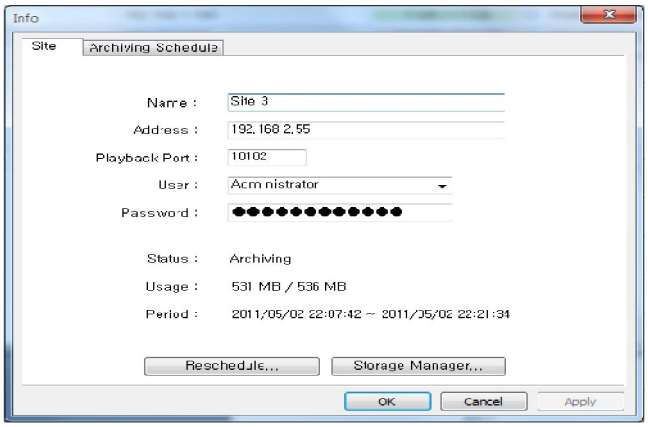
Start : Start selected Schedule.
Stop : Stop selected Schedule.
Delete : Delete selected Schedule. The Schedule can be deleted only when the Archiving is stopped. It is also possible to choose deletion of Storage File from separate Dialog.
Info : Read the detail of selected Schedule. (refer to C. for the detail)

B. Tool Bar

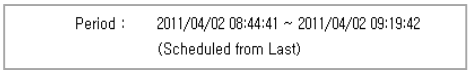
New Schedule (+) : Run Schedule Wizard.
Start All (▶) : Start all registered Schedule. (It doesn't affect the sites where Archiving is already in progress.)
Stop All (■) : Stop all registered Schedule. (It doesn't affect the sites where Archiving is already stopped.)
Storage Manager (⛁): Run Storage Manager. (refer to 4-D. for the detail)
Log (🗎) : Check Log list of each site. (refer to 4-E. for the detail)

C. Detail Information

a. Site



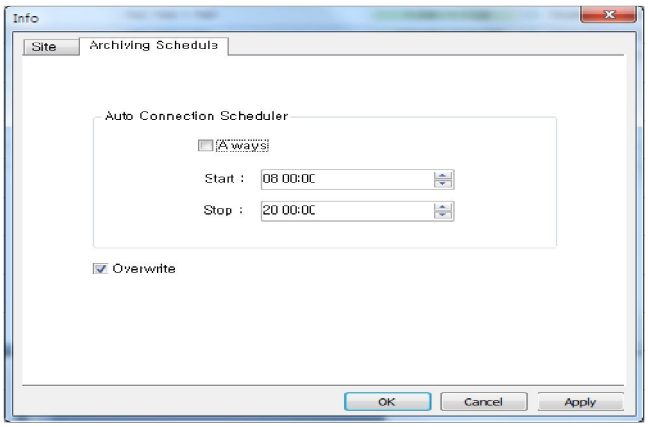
Name / Address / Playback Port / Username / Password : Information on registered Site and Log-in. (refer to 3-Step1 for the detail)
Status : It shows current Archiving status and directly related with Icon on Archiving status of main screen. It is shown as Connecting, Archiving, Stopped, and etc. and when the progress of Archiving is not performed or failed, it displays the cause of failure.
Usage : Usage or full capacity of Storage Group used for Archiving.
Period : Full period of data has been archived.
Reschedule : Reschedule the starting point of Archiving data. The way to do is the same as 3-Step. If new schedule is set, the new schedule will be displayed as shown below.



Storage Manager : Run Storage Manager for the site.

* After modifying information about Archiving such as Name, Address, Playback Port, Username, Password, Overwrite, Reschedule, make sure click Apply button to confirm the changes.

b. Archiving Schedule

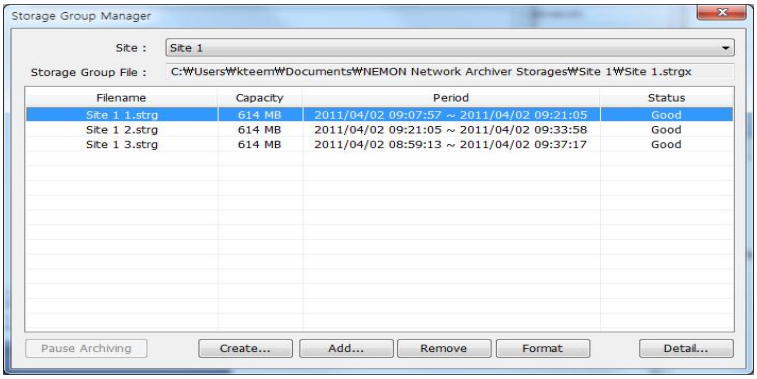


Auto Connection Scheduler : Set time schedule for Archiving. Select time for Start/Stop points. Archiving will automatically be performed as the time set. If Archiving is failed due to any causes, it will continuously attempt to re-connect the sites. If Always is selected, Archiving will continue until user stops the operation.

Overwrite : Select Overwrite to overwrite storage. When it is full, the oldest data is automatically overwritten by the latest data, and Archiving continues.

D. Storage Manager

Manage Storage Group each Archiving schedule.



Filename : Name of Storage File. It is possible to check full path where the file is being stored by tool tip when mouse cursor is placed on the Filename.
Capacity : Full capacity of File.
Period : Full period of recorded data on Storage File.
Status : Current status of File.

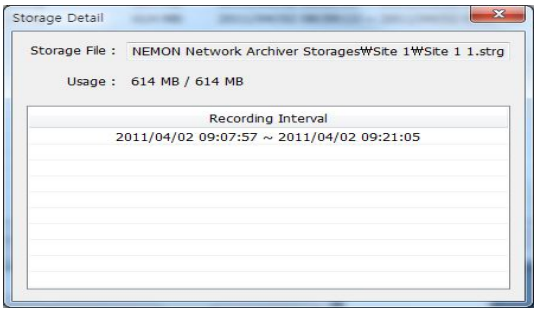
Good	Able to retreat a file
Not Formatted	Not been formatted
Open Error	Not able to open a file
Not Found	File does not exist

Create : Create new Storage File.
Add : Add existing Storage File.
Remove : Remove selected Storage File. It is possible to choose deletion of Storage File from separate Dialog.
Format : Format selected Storage File.

* Each site has own ID and the ID is included and hidden on each Storage File as well. If adding Storage File used from other Sites, it recognizes as "Not Formatted" due to different IDs, thus the new Storage needs to be formatted.

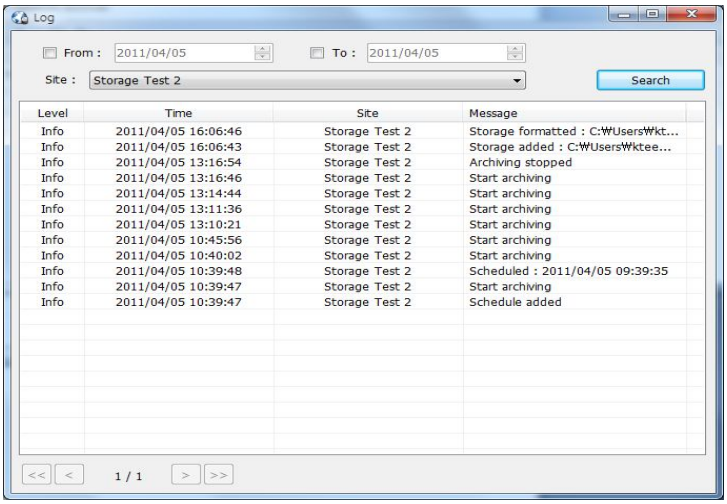
* Create/Add/Remove/Format can not be performed for Storage Group under Archiving. Try it after stopping Archiving (Pause Archiving).

Detail : It is available to check the detail section list of the selected Storage File from separate Dialog.



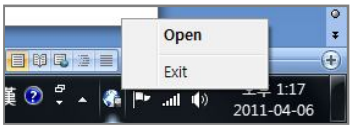
E. Log

Check the Log status of each Schedule.


Log
From :
2011/04/05
To :
2011/04/05
Site :
Storage Test 2
Search
Level
Time
Site
Message
Info 2011/04/05 16:06:46 Storage Test 2 Storage formatted : C:₩Users₩kt...
Info 2011/04/05 16:06:43 Storage Test 2 Storage added : C:₩Users₩ktee...
Info 2011/04/05 13:16:54 Storage Test 2 Archiving stopped
Info 2011/04/05 13:16:46 Storage Test 2 Start archiving
Info 2011/04/05 13:14:44 Storage Test 2 Start archiving
Info 2011/04/05 13:11:36 Storage Test 2 Start archiving
Info 2011/04/05 13:10:21 Storage Test 2 Start archiving
Info 2011/04/05 10:45:56 Storage Test 2 Start archiving
Info 2011/04/05 10:40:02 Storage Test 2 Start archiving
Info 2011/04/05 10:39:48 Storage Test 2 Scheduled : 2011/04/05 09:39:35
Info 2011/04/05 10:39:47 Storage Test 2 Start archiving
Info 2011/04/05 10:39:47 Storage Test 2 Schedule added
<< < 1 / 1 > >>

F. System Tray

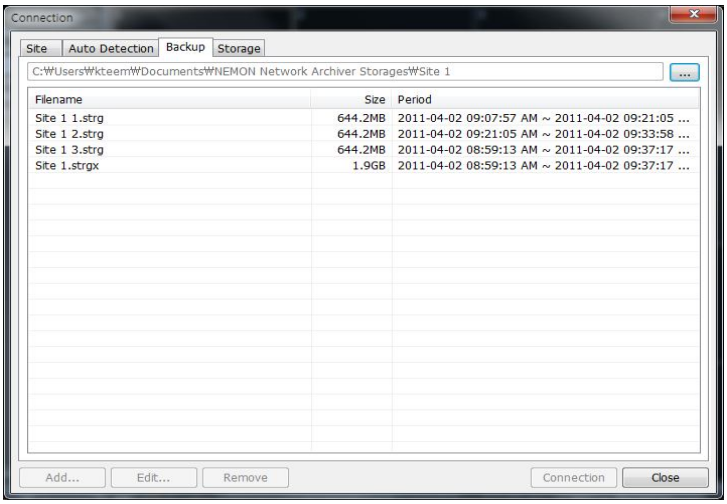
The program icon (System Tray) is located as shown below. Network Archiver provides System Tray. Find the System Tray in order to shut down Network Archivier safely and completely.



5. Reference

a. Storage Playback to utilize Nemon2

Each Storage File(.strg) and Storage Group File(.strgx) can be played on Nemon2. Playback all Storage Files linked and belong to the Storage Group at once.



b. Restrictions

1. Storage File which is being used by Network Archiver can not be playback at the same time on Nemon2. On the contrary, Storage File which is being used by Nemon2 can not be used on Network Archiver.
2. Archiving progress occupies one Playback Connection of the site.
3. Full capacity of Storage File has to be at least 0.5GB or more.
4. Path for the first created Storage Group File by Schedule Wizard cannot be changed once it is created.

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THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE, IN WHICH CASE USERS WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT THEIR OWN EXPENSE.

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This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

ROHS Compliance